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ABSTRACT

This volume consists of the first four units of a basic core curriculum that is intended for all health workers. The units deal with the following topics: (1) the health care facility, the long-term care facility, the health team, and the nursing team; (2) verbal and nonverbal communication, written communication, human behavior, ethical behavior, and legal behavior; (3) maintaining the patient's environment, the nursing unit, equipment and supplies, introduction to first aid, emergency cardiopulmonary resuscitation and the Heimlich maneuver; and (4) organization of the musculoskeletal, integumentary, digestive, circulatory, respiratory, urinary, endocrine, reproductive, and nervous systems. Each unit is comprised of a series of learning modules, each of which contains a rationale, performance objectives, learning activities and answers, terminology, and one or more posttests. (MN)

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HEALTH OCCUPATIONS CURRICULUM

SKILLS AND THEORY FOR HEALTH ASSISTANT

VOLUME I UNITS 1-4

CE 033 938

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DEDICATION

To Shirley Mannion and Dorothy Lawrence: Shirley believed that given the proper support systems almost anyone could succeed and that everyone should be able to go from one occupation to another without repeating learning abilities (career ladder/mobility). Dorothy wrote the original objectives and organized an open entry/open exit program with a Core Curricula for health workers.

To those two pioneers, we owe much. Thanks for being creative and willing to take risks.

REFERENCES AND REQUIRED TEXTS

The following is a list of required textbooks and reference materials.

REFERENCE BOOKS

1. Hospital Research and Educational Trust (HRET), Being a Nursing Aide, Robert J. Brady Company, Bowie, Maryland, 1978.
2. Anthony, Catherine Parker, Structure and Function of the Body, C.V. Mosby Company, St. Louis, Missouri, 1980.
3. Velma L. Kerschner, R.N., B.S., Nutrition and Diet Therapy for Practical Nurses, F.A. Davis Co., Philadelphia, Pennsylvania, 1977.
4. Thomas, Clayton L., Taber's Cyclopedic Medical Dictionary, F.A. Davis Company, Philadelphia, Pennsylvania, 1979.
5. Staton, Thomas F., How To Study, Montgomery, Alabama, 1968.
6. Mosby's Review of Practical Nursing, C.V. Mosby Company, St. Louis, MO., 1970.
7. Tucson Community Council, The United Way Directory of Social Resources, Tucson, Arizona, 1978.

REQUIRED BOOKS

1. Marlow, Dorothy, RN Ed. D., Textbook of Pediatric Nursing, W.B. Saunders Co. 1977.
2. Caldwell, Esther, and Barbara R. Hegner, Geriatric Nursing, A Study of Maturity, Delmar Publishers, Albany, New York, 1976.
3. Johnston, Dorothy F., Total Patient Care, The C.V. Mosby Company, St. Louis, Missouri, 1979.
4. Bethea, Doris C., Introductory Maternity Nursing, J.B. Lippincott Co., Philadelphia, Pennsylvania, 1976.
5. Falconer, Patterson, Gustafson, Sheridan, Current Drug Handbook, 1980-1982, W.B. Saunders Co., Philadelphia, Pennsylvania.
6. Morgan Arthur James, M.D. and Mabye K. Johnston, R.N., Mental Health and Mental Illness, J.B. Lippincott Co., Philadephia, Pennsylvania, 1976.

DEFINITIONS AND EXPLANATION OF CURRICULUM COMPONENTS

To assist you in understanding how to use these units, we have written the following definitions and explanation for the terms which will be encountered.

Unit: One whole book or topic. Each unit has a number and a title. This first unit is Unit 1; its title is: The Health Care Facility and the Health Team.

Module: Each module has a letter and a title and is like a chapter in a book. The first module in Unit 1 is: Module A, The Health Care Facility.

Suggested References: These are included in the front of each unit only to be utilized if the student is interested in learning more about a subject or trying to understand something more thoroughly.

Rationale: A statement which tells why it is important that the student learn the material contained in each unit.

Performance Objective: Found at the beginning of each module, this tells the student specifically what he/she needs to identify, describe, or demonstrate after completing each module. The student will show the instructor through either written evaluation or by demonstration that he/she has learned what is stated in each objective.

Learning Activities: Found at the beginning of each module, this section gives the student general information and directions on what will be needed to complete the module. Many modules are self-contained or do not require any outside resources, while others will refer the student to textbooks and/or audiovisual materials.

Activities: Information the student must learn in order to satisfactorily complete the performance objectives. Each new subject area is a different activity. Within each activity specific instructions will be given on what to read or which audiovisual should be viewed. There are also written exercises to help the student learn the material. Some of the written exercises will refer the student to the answers on the following page or the answers will be found upside down on the same page. In other exercises, the student will be asked to find the answers in the information already read.

Terminology Section: Common terms found in each unit. This section is a terminology resource for the student.

Post Test: Found at the end of each unit, this is either a written evaluation or a demonstration for your instructor which will measure your knowledge of the skill(s) covered. Your instructor will tell you when it is time to take a Post Test.

Answers to Post Test: These are the answer keys to the Post Tests.

NOTE:

Challenging: A statement on the first page that states, "if you wish to challenge a test, see your instructor". Some students will have had previous nursing experience or possibly had college courses covering parts of the curriculum. If the student feels he/she knows the material and can successfully complete the objectives stated in a module without completing all the learning activities, the student should ask the instructor about challenging. If he/she is successful and passes this evaluation to the instructor's satisfaction, the student may progress to the next module.

ACKNOWLEDGEMENTS

The staff of the Pima Community College Skill Center who participated in preparing the curriculum for publication includes:

Carol Orin, Director
Louise Adams
Orpha Hebden
Jerry Lewis
Dorothy Moore
Sandy Smith
Evelyn Long
Catherine Kelly

Typists included: Virginia Wortman
Roseann Rodriguez

The Health Occupations staff would like to give special thanks to the administration, staff, and students of the Pima Community College Skill Center, and also to the nursing instructors of the Maricopa County Skill Center and the Gila River Career Center for their participation through the Arizona Skills Curriculum Project which was involved in the early stages of the development of the original HOP curriculum.

Carol Erickson, director of the Health Occupations Program at the Maricopa County Skill Center should also receive a special thanks for providing excellent technical assistance in editing and updating the current curriculum. Carol wrote the module on Long-Term Care Facilities, which is an addition to the curriculum.

PREFACE

To Instructors:

While preparing this curriculum for publication, the staff revised and updated previous materials. The evaluation questions have now been field tested for validity and reliability and we have established 70% as a minimum passing grade; however, we did not attach this percentage to each objective. Instead, we have introduced each objective with the phrase "To The Instructor's Satisfaction" since we believe our program is based on the individual's abilities and needs, and each instructor should assess and evaluate each student individually. We suggest that each nursing program determine the type of the evaluation and/or the minimum level for passing for their own program. Please keep in mind that our experience has shown that 70% is the minimum necessary to function safely at the bedside.

The units and the tests have been prepared by individual instructors in their own area of expertise. You will find various writing styles throughout the curriculum; however, the format for all the units is the same. The staff attempted to make each unit self-contained, but in many units this was impossible. The required texts for the program are listed in the introduction. The audiovisual materials which are required are listed within the content of each unit. If it is impossible to have these specific audiovisual materials or other required materials available in your training facility, the units can be adapted to similar audiovisuals or to instructor demonstration. The worksheets covering material on the audiovisuals can be used as study guides since the answers are included.

The tests for each unit have been written to test as many important points as possible as stated in the objectives. Although we would hope the students would learn as much as possible of the information presented, due to the overwhelming number of questions which would need to be asked, we only test over what we felt were the most important. As an instructor, you may choose to add or delete information important for your program.

In most cases, the order of presentation of the units can be determined by each program; however, Unit 4 (Anatomy and Physiology) and Unit 8 (Nursing Skills) were written to be presented together. The staff felt that the knowledge of basic anatomy and physiology applied to procedures and to skills gave a greater understanding of why the student needed to learn the material.

It should also be noted that Units 9 through 13 are not included in this published curriculum. At this writing, we have only revised and updated the materials which apply to nurse assistant and practical nurse.

Unit I introduces the health care facility, the long-term care setting, and the members of the health care teams.

THE HEALTH CARE FACILITY AND THE HEALTH TEAM

Module A - The Hospital
Module B - The Long-Term Care Facility
Module C - The Health Team
Module D - The Nursing Team
Terminology
Post Test
Answer Sheet

When you have completed the Learning Activities and are ready for a test, or wish to challenge a test, please see your instructor.

Suggested References

1. The Hospital Story. Mount San Jacinto College, San Jacinto, California. (audiovisual)
2. Local Telephone Directory.

unit 1

THE HEALTH CARE FACILITY AND THE HEALTH TEAM

Module A - The Hospital

RATIONALE

Nursing assistants often work in hospitals as members of the health team. This module will introduce you to the purposes of the hospital.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the definition of "A Hospital".
2. Identify the four functions of the hospital.
3. Identify two types of hospitals.

LEARNING ACTIVITIES

Directions: There are three learning activities in this module. Read the information given in each, and complete the exercises. Check your answers with those given on the last page of this module.

If you have any questions or problems, or need help, ask your instructor for assistance.

ACTIVITY #1. Definitions

Directions: Read the following.

The Hospital is defined as a facility that provides:

1. medical services
2. physicians' services
3. continuous nursing services
4. treatment for patients

Directions: Fill in the blanks with the correct word(s).

1. A facility which provides diagnosis and treatment for patients is:

____

LEARNING ACTIVITIES - continued

2. Four services provided by a hospital are:

   a. ____________________ c. ____________________

   b. ____________________ d. ____________________

ACTIVITY #2. Basic Functions of a Hospital

Directions: Read the following.

1. The first function of a hospital is to provide CARE for sick and injured persons. Patient care is provided by the hospital through:
   a. surgery
   b. medicine
   c. rehabilitation
   d. testing
2. The second function of a hospital is to provide EDUCATION through:
   a. medical schools (student doctors)
   b. nursing schools (student nurses)
   c. in-service education (patient and employee)
3. The third function of a hospital is to provide RESEARCH through:
   a. research programs for study of prevention and treatment of disease
   b. research to determine the causes of disease

Directions: Complete the following exercise.

List three basic functions of a hospital:

1. ____
2. ____
3. ____

ACTIVITY #3. Types of Hospitals

Directions: Read the following.

There are two types of hospitals:

1. General 2. Special

LEARNING ACTIVITIES - continued

A GENERAL HOSPITAL treats persons with acute illnesses. It must have a complete professional staff, as well as the special departments and equipment needed to treat all types of illness and/or surgery.

Some hospitals are specially equipped to diagnose and treat specific illnesses. These are usually referred to as SPECIAL HOSPITALS. Some examples are:

PSYCHIATRIC HOSPITALS:	Psychiatric hospitals diagnose and treat mental illness or mental disorders.
MATERNITY HOSPITALS:	Maternity hospitals are designed to treat maternity cases and/or diseases of the female reproductive system.
PEDIATRIC HOSPITALS:	Pediatric hospitals are specially equipped and staffed to treat children.
BURN HOSPITALS:	Burn hospitals are specially equipped and staffed to treat burn injuries.

There are additional types of Special Hospitals, and many General Hospitals are also equipped to diagnose and treat those special problem areas.

Directions: List six General Hospitals in this city. (You may use a telephone directory to find this information.)

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________

Directions: Answer the following.

1. List two types of Special Hospitals:

   a. ____________________

   b. ____________________

LEARNING ACTIVITIES - concluded

2. List one local Special Hospital:

____

3. List one local Psychiatric Hospital:

____

ANSWERS

ACTIVITY #1

1. hospital

2. nursing services
physicians' services
medical services
diagnosis and treatment

ACTIVITY #2

1. patient care

2. education

3. research

ACTIVITY #3

1-6. (Check phone book)

1. (Any two of the following)

   Psychiatric
   Maternity
   Pediatric
   Burn

2. (Check phone book)

3. (Check phone book)

THE HEALTH CARE FACILITY AND THE HEALTH TEAM

Module B - The Long-Term Care Facility

RATIONALE

In the long-term care facility, nursing assistants are an important part of the health team.

This module will define the long-term care facility and familiarize you with its purpose and functions.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the definition of "a long-term care facility".
2. Identify one function of a long-term care facility.

LEARNING ACTIVITIES

Directions: Read the information on the following pages and complete the exercises. Check your answers with those given on the last page of this module. If you have any questions or problems, or need help, ask your instructor.

ACTIVITY #1. Definitions

Directions: Read the following.

1.	**LONG-TERM CARE FACILITY:**	An extended care facility, often called a nursing home, which provides care for people who require skilled or semi-skilled care, but do not require the full services of a hospital.
2.	**RESIDENT:**	The person ("patient") who resides in a long-term care facility.

Directions: Fill in the blanks with the correct word(s).

1. A facility which provides semi-skilled care is called a ______________________

   ______________________________.

2. The person who resides in a long-term care facility is a ____________________

   ______________________________.

LEARNING ACTIVITIES - concluded

ACTIVITY #2. Functions of the Long-Term Care Facility

Directions: Read the following.

The long-term care facility has four basic functions:

1. To provide care for aging people who are unable to care for themselves.
2. To provide rehabilitation services for people who need institutional care, but do not require intensive nursing care.

   Example: A person who has had a fracture surgically repaired and needs physical therapy and skilled nursing care.
3. To provide supportive services for people who require total care.

   Example: Persons who are paralyzed or unconscious, and are totally dependent on others to care for them.
4. To provide a home for the aging who have no place else to live, or prefer to live in a long-term care facility.

ACTIVITY #3.

Directions: Using the yellow pages of a telephone directory, locate two nursing homes, or long-term care facilities, and write the names and addresses below:

1. ______________________________
2. ______________________________

Directions: List the four basic functions of a long-term care facility.

1. ______________________________
   ____
2. ______________________________
   ____
3. ______________________________
   ____
4. ______________________________
   ____

ANSWERS

ACTIVITY #1

1. long-term care facility
2. resident

ACTIVITY #3

1-2. (Check phone book)

1. Care for those who are unable to care for themselves
2. Rehabilitation services
3. Supportive services
4. Provide a home for the aging

THE HEALTH CARE FACILITY AND THE HEALTH TEAM

Module C - The Health Team

RATIONALE

Can you name ten members of the Health Team, and at least one of the functions associated with each member? When you complete this module you will will know who the members of the Health Team are, and what special duties are assigned to them.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify one function or duty of 10 of 12 members of the Health Team.
2. Identify the person with whom the Health Team is primarily concerned.

LEARNING ACTIVITIES

Directions: Read the information on the following pages and complete all the exercises. If you have a question or a problem, ask your instructor to help you.

ACTIVITY #1. The Health Team

Directions: Read the following.

The Health Team is a group of people individually trained in their own special field, functioning as a unit to give patients total care. COOPERATION is the keynote. Health Team members are vitally interested in the health and welfare of the patient.

The Health Team members, and their functions as members of the team, are:

1. DIETITIAN
   a. Plans the patients' meals, based on individual nutritional needs.
   b. Informs patients about their special diets.
2. CENTRAL SUPPLY ASSISTANT
   a. Maintains adequate stock of supplies, such as bandages and instruments.
   b. Sterilizes equipment.
   c. Charges the patients' accounts for supplies used.

LEARNING ACTIVITIES - continued

3. HOUSEKEEPING ASSISTANT
    - a. Keeps the hospital clean.
    - b. Washes walls, mops floors, cleans and disinfects beds, and wipes windows.
    - c. Looks after environmental conditions in the health care facility.
4. RESPIRATORY THERAPIST
    - a. Administers oxygen.
    - b. Assists patients with breathing problems.
    - c. Administers Intermittent Positive Pressure Breathing treatments (I.P.P.B.) or other special respiratory aids.
5. LABORATORY TECHNICIAN ASSISTANT
    - a. Performs simple tests and procedures in the laboratory.
    - b. Helps the doctor to diagnose and to treat disease(s).
6. OCCUPATIONAL TECHNICIAN ASSISTANT
    - a. Teaches the patients creative activities, as directed by the doctor, to occupy the patients' free time while confined to the health care facility.
    - b. May help a disabled patient learn to use special therapeutic devices.
7. PHARMACIST
    - a. Prepares and dispenses patients' medication as prescribed by their doctors.
    - b. Works in the health care facility pharmacy or in a drugstore.
8. PHYSICIAN (M.D. or D.O.)
    - a. A doctor trained and skilled in the diagnosis and treatment of disease.
9. PHYSICAL THERAPIST
    - a. Gives massages and therapeutic exercises.
    - b. Administers applications of water, heat, light, and electricity, to treat disorders of the muscles.
10. RADIOLOGY TECHNICIAN or X-RAY TECHNICIAN
    - a. Assists with diagnostic X-rays.
    - b. Assists with radiation therapy.

LEARNING ACTIVITIES - continued

11. SOCIAL WORKER

    a. Helps patients with social problems. (Social problems might include: money, a place to live, child care, and/or food.)

12. THE CLERGY

    a. Provides the patient with spiritual assistance through prayer, listening, and talking.

    b. Provides help for the patient's family through prayer, listening, and talking.

Suggested Activity: View the trainex, "THE HOSPITAL STORY", before completing the next exercise of this activity. Ask your instructor to provide you with the audiovisual material.

Directions: List one function or duty of each of the following Health Team members.

1. Central Supply Assistant: ____________________
   ____
2. Dietitian: ____________________
3. Housekeeping Assistant: ____________________
   ____
4. Respiratory Therapist: ____________________
   ____
5. Laboratory Technician: ____________________
   ____
6. Physician: ____________________
   ____
7. Occupational Therapist: ____________________
   ____
8. Pharmacist: ____________________
   ____
9. Physical Therapist: ____________________
   ____

LEARNING ACTIVITIES - concluded

10. Social Worker: ____

____

11. Clergy: ____

____

12. Radiology Technician or X-ray Technician: ______________________

____

13. The Health Team is concerned with the total care of all ______________.

NOTE: Check your answers with the information you have read in this module.

Now you are going to learn about the Nursing Team.

THE HEALTH CARE FACILITY AND THE HEALTH TEAM

Module D - The Nursing Team

RATIONALE

When you complete this module, you will know the specific duties of each member of the Nursing Team.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the definition of "The Nursing Team."
2. Identify the members of "The Nursing Team."
3. Identify the definition of 5 of the 10 vocabulary words from the Terminology Section of this module.

LEARNING ACTIVITIES

Directions: Read the information on the following pages. Complete the exercises. Check your answers with those given on the last page of this module. If you have any questions or problems, or need help, ask your instructor.

ACTIVITY #1. The Nursing Team

Directions: Read the following.

The Nursing Team is a group of nurses, working together to plan and to give nursing care to patient(s). By dividing nursing duties, team nursing provides 24-hour continuous, efficient, nursing care.

Primary nursing is a program so designed that one nurse is responsible for the total care of the patient and utilizes nursing assistants for help where required.

The Nursing Team members are:

1. REGISTERED NURSE (RN)
    a. Trained in one of three types of schools for nursing; namely:
        (1) University (4+ years); Bachelor of Science
        (2) School of Nursing (3 years); Diploma - Hospital
        (3) Junior College (2 years); Associate Degree

LEARNING ACTIVITIES - continued

- b. Must pass a State Licensing Examination
- c. Duties of the Registered Nurse include:
  - (1) Supervisor of a Department
    - (a) plans work schedules
    - (b) is responsible for patient care
    - (c) orders supplies and/or equipment
    - (d) selects personnel to work in a specific patient area
  - (2) Head Nurse
    - (a) is responsible for administering nursing care to one single unit
    - (b) teaches new personnel
    - (c) makes out work schedules
  - (3) General duty and staff nurses
    - (a) are involved in direct patient care, specifically
      - i) teach patients
      - ii) dispense medications (oral, IM, IV)
      - iii) are responsible for patients' records
      - iv) are responsible for total care of 15 plus patients
      - v) assign and assist LPNs and NAs

2. LICENSED PRACTICAL NURSE (LPN)

- a. Must have at least one year's training in a vocational school
- b. Must pass a State Licensing Examination
- c. Duties of the Licensed Practical Nurse include:
  - (1) performs direct patient care (bedside nursing)
  - (2) responsible for dispensing oral and IM medications
  - (3) teaches patients
  - (4) performs many special nursing treatments

LEARNING ACTIVITIES - continued

3. NURSING ASSISTANT (NA)

   a. A person who helps the nurses perform their work in the hospital. The Nursing Assistant is trained on the job, or in a vocational school for approximately three months.

   b. Duties of the Nursing Assistant include:

      (1) provides direct nursing care

      (2) answers call lights

      (3) assists patients to eat, or feeds patients

      (4) assists patients with baths

      (5) makes patients' beds

      (6) keeps patients' rooms (units) neat and clean

      (7) transports patients to other departments

      (8) observes patients and reports to RN or LPN

The Ward Clerk (WC) is a person who helps the members of the Nursing Team but is not a member of the Nursing Team. A Ward Clerk is sometimes called a Unit Clerk or a Medical Service Coordinator.

   a. Completes most of the paperwork for the patients, but is not responsible for direct patient care

   b. May be trained on the job, or in a vocational school for one to three months

   c. Duties of the Ward Clerk (Unit Clerk) include:

      (1) puts together new charts and keeps patients' charts up to date and in order

      (2) transcribes doctors' orders from doctors' order sheet to Kardex and Medex after the physicians' daily rounds

      (3) initials formal requests for services of other departments

      (4) keeps census of current admissions, discharges, transfers, and deaths (as each occurs)

      (5) maintains adequate ward-unit supplies, and formally requests maintenance and repairs

      (6) performs unit-filing duties

LEARNING ACTIVITIES - continued

(7) acts as receptionist for visitors and patients

Directions: Fill in the following blanks.

1. List the members of the Nursing Team:

   a. ______

   b. ______

   c. ______

2. List two duties of each of the members of the Nursing Team:

   a.
   (1) ______

   (2) ______

   b.
   (1) ______

   (2) ______

   c.
   (1) ______

   (2) ______

ACTIVITY #2. Terminology

Directions: Technical or special words used in a business, art, profession, or field of study, are referred to as the terminology of that specific area. Many special words are used in a health care facility. At the end of this unit you will find a Terminology section - a list of some of these special words and their definitions. Consult this terminology section, and study and learn the meaning of the following words. Fill in the blanks with the correct definitions.

1. Health: ______

2. Diagnose: ______

3. Prescribe or prescription: ______

4. MD: ______

5. DO: ______

6. NA: ______

LEARNING ACTIVITIES - concluded

7. RN: ______________________________

8. WC: ______________________________

9. LPN: ______________________________

10. HOP: ______________________________

You have just completed Unit 1. Are you ready for the final evaluation?

Before you take the final, review Modules A, B, C, and D. If you have any questions, now is the time to ask your instructor to answer them.

ANSWERS

ACTIVITY #1

1. a. Registered Nurse
   b. Licensed Practical Nurse
   c. Nursing Assistant

2. a-c. Check your answers with the information given in Activity #1.

ACTIVITY #2

(Consult Terminology Section)

TERMINOLOGY

The following is a list of terms, together with the definition of each one. These are the terms you should recognize and understand for the successful completion of Unit 1 of the Health Occupations Program. Directions for studying and using these terms are given in the individual modules for the unit.

DIAGNOSE:	Steps taken by a doctor to determine the nature of a disease and to recognize the disease by its signs or symptoms.
DO:	Doctor of Osteopathy (an Osteopath).
HEALTH:	That condition (bodily soundness) in which all the functions of the body and the mind perform normally. (A state of well-being and freedom from disease.)
HOP:	Health Occupations Program.
HOSPITAL:	An institution that is designed and equipped with staff, facilities and medical services from physicians and nurses to provide diagnosis and treatment for the sick and injured.
IPPB:	Intermittent Positive Pressure Breathing.
KARDEX:	A metal folder which contains pertinent information about patients and the plans of treatment for them.
LONG-TERM CARE FACILITY:	An institution that provides care to patients (residents) who do not require continuous or complete hospital services.
LPN:	Licensed Practical Nurse.
MD:	Doctor of Medicine.
MEDEX:	A metal folder which contains the names of the medications, and the scheduled time these medications are to be taken by the patient.
MEDICINE:	A drug. The art of preventing and curing disease without surgery.
NA:	Nursing Assistant.

TERMINOLOGY - concluded

NURSING HOME:	Another name for a Long-Term Care Facility.
OT:	Occupational Therapy.
PCA:	Patient Care Attendant.
PRESCRIPTION:	An order for drugs, medications, and treatments written by a physician.
RESIDENT:	An individual who resides in a Long-Term Care Facility.
RN:	Registered Nurse.
REHABILITATION:	The process of restoring a patient to a former condition of health or useful and constructive activity.
RESEARCH:	Scientific study and investigations to establish facts relating to causes and cure of disease.
SN:	Student Nurse.
SURGERY:	Branch of medicine dealing with operative procedures used for diagnosis and to correct deformities, injuries, etc.
UC:	Unit Clerk.
WC:	Ward Clerk.

POST TEST

Modules A, B, C, and D

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle the letter on the answer sheet found at the end of this Post Test. DO NOT WRITE ON THIS TEST.

1. The Nursing Care Team in a hospital is primarily concerned with the needs of the:

   a. physician
   b. patient
   c. hospital
   d. nursing personnel

SITUATION:

When Jan Notoes was in the hospital, many members of the Patient Care Team were involved in her care. She received the medications prescribed for her, a bath, breathing treatments with a breathing machine, and a special diet. Her room and patient unit were kept clean and neat. The following questions pertain to Jan's situation.

2. Who would have prescribed Jan's medication and breathing treatments?

   a. M.D.
   b. NA
   c. RN
   d. WC

3. Which of the following hospital personnel would most likely give Jan her medications?

   a. NA
   b. M.D.
   c. RN
   d. WC

4. Who would transfer the doctor's orders to the Medex and the Kardex and also send the requests for the orders?

   a. NA
   b. M.D.
   c. RN
   d. WC

POST TEST - continued

5. Who would most likely give Jan her bath and personal care?

   a. NA
   b. M.D.
   c. RN
   d. WC

6. The breathing treatments Jan received may have been given by the:

   a. physical therapy assistant
   b. respiratory therapy assistant
   c. dietary assistant
   d. nursing assistant

7. Jan's meal trays with her special diet were probably delivered by the:

   a. dietary assistant
   b. respiratory therapy assistant
   c. physical therapy assistant
   d. housekeeping assistant

8. Jan's room and the furnishings were kept clean by the:

   a. housekeeping assistant
   b. dietary assistant
   c. respiratory therapy assistant
   d. physical therapy assistant

NOTE: The following questions are general in nature and do not refer to Jan.

Directions: Read each question and its lettered answers. When you have decided which answer(s) is or are correct, circle the letter(s) on the answer sheet. DO NOT WRITE ON THIS TEST.

9. The Ward Clerk's (Unit Clerk's) duties include:

   a. maintaining Kardex and patients' environment
   b. maintaining patient movement and answering telephone calls
   c. writing doctors' orders and measuring vital signs
   d. answering the telephone and filling out prescriptions

10. Which is a definition of "HEALTH"?

    a. passing tests
    b. receiving medications
    c. being free of disease
    d. recuperating

POST TEST - continued

11. A hospital that admits only children for care is a/an:

    a. general hospital
    b. osteopathic hospital
    c. orthopedic hospital
    d. special hospital

12. The Nursing Team includes:

    a. student nurses and nursing assistants
    b. professional nurses
    c. practical nurses
    d. all of the above

13. A long-term care facility is another name for:

    a. hospital
    b. home care
    c. nursing home
    d. nursery

14. The persons who assist the patient with spiritual needs are the:

    a. social worker
    b. clergy
    c. dietitian
    d. pharmacist

15. The person who gives therapeutic exercises to the patients is the:

    a. occupational therapist
    b. physical therapist
    c. radiology technician
    d. respiratory therapist

16. The person who administers oxygen is the:

    a. occupational therapist
    b. physical therapist
    c. radiology technician
    d. respiratory therapist

17. The person who assists with diagnostic X-rays is the:

    a. occupational therapist
    b. physical therapist
    c. radiology technician
    d. respiratory therapist

POST TEST - continued

18. The person who teaches the patient creative activities is the:

    a. occupational therapist
    b. physical therapist
    c. radiology technician
    d. respiratory therapist

19. One function of a long-term care facility is:

    a. care of acutely ill patients
    b. a home for the elderly
    c. diagnosis and treatment
    d. research

20. The Health Team member whose duty is sterilizing equipment is the:

    a. dietitian assistant
    b. housekeeping assistant
    c. central supply assistant
    d. nursing assistant

21. Nursing supervision of patient care is a duty of the:

    a. LPN
    b. RN
    c. NA
    d. LRN

22. A group of nurses working together to give nursing care to patients is called the:

    a. Patient Care Team
    b. Doctor's Team
    c. Auxiliary Staff
    d. Nursing Team

23. The main functions of the hospital include:

    a. teaching, research and care for the sick
    b. research, rehabilitation and treatment for the aged
    c. care for the ill person, care for the aged, and teaching
    d. care for those with contagious diseases

24. The hospital is a facility that:

    a. is often called a nursing home
    b. provides job training for individuals interested in health care
    c. provides care for individuals who need to be rehabilitated
    d. provides treatment for the acutely ill

POST TEST - concluded

25. Two types of hospitals are:

    a. General and Geriatric
    b. Long-term and Special
    c. General and Special
    d. General and Nonconventional

ANSWERS TO POST TEST

Modules A, B, C, and D

1. b
2. a
3. c
4. d
5. a
6. b
7. a
8. a
9. b
10. c
11. d
12. d
13. c
14. b
15. b
16. d
17. c
18. a
19. b
20. c
21. b
22. d
23. a
24. d
25. c

Unit 2 introduces different ways to communicate feelings and ideas, and how to understand what other people try to express. In addition, human behavior, and ethical and legal behavior are discussed.

COMMUNICATION AND BEHAVIOR FOR THE HEALTH CARE WORKER

Module A - Verbal and Nonverbal Communication
Module B - Written Communication
Module C - Human Behavior
Module D - Ethical Behavior
Module E - Legal Behavior
Terminology
Post Tests: 1. Modules A and B
2. Modules C, D, and E
Answer Sheets

When you have completed the Learning Activities and are ready for a test, or wish to challenge a test, please see your instructor.

Suggested References

1. Milliken, Mary Elizabeth. Understanding Human Behavior. Albany, New York: Delmar Publishers, 1974.

2. Harris - Tuchman Productions, Inc., 751 N. Highland Ave., Hollywood, California 90038. (audiovisual)

   Communication Face-to-Face

   How to Listen More Effectively

   Understanding Yourself

3. Introduction to the Daily Needs of Well/Ill Persons. Mt. San Jacinto College, Gilman Hot Springs, California 92340. (audiovisual)

unit 2

COMMUNICATION AND BEHAVIOR

Module A - Verbal And Nonverbal Communication

RATIONALE

Do you have problems communicating? Most of us do. This module will introduce some methods you can use to communicate successfully.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the meaning of 6 of the 12 vocabulary words given in Activity 1.
2. Identify given communication problems.
3. Demonstrate effective and ineffective communication on the clinical unit with the team leader, co-workers, and patients.

LEARNING ACTIVITIES

In this module you will read information and answer questions. There will be an opportunity for you to practice communicating. When you are ready for these special activities, your instructor will help you.

ACTIVITY #1. Terminology

Directions: Consult the terminology section at the end of this unit. Study the definitions and learn the meaning of the following words:

1. Communication
2. Nonverbal Communication
3. Verbal Communication
4. Feedback
5. Paraphrasing
6. Gestures
7. Sender
8. Message

LEARNING ACTIVITIES - continued

9. Receiver
10. Listening
11. Writing
12. Response

ACTIVITY #2. Communication

Directions: Read the following:

Communication is defined as an exchange of information. In the process of exchanging information, many people-to-people problems arise. Some of these are communication problems.

Examples:

1. Family-related problems:
    a. Parents vs. children
    b. Husbands vs. wives
2. Job-related problems
    a. Employee vs. employer
    b. Employee vs. employee
3. Training Center problems:
    a. Instructor vs. students
    b. Students vs. students

The purpose of communication is to send and receive messages. These messages contain information concerning our true feelings, facts and opinions, values, and directions. Frequently we are too busy to do many daily tasks; however, we should take time to communicate successfully. When we do this, we eventually save time and avoid being misunderstood.

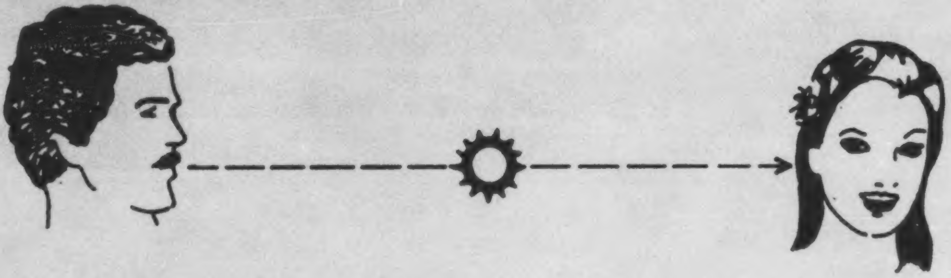
ACTIVITY #3. The Parts of Communication

Directions: Read the following material and complete the exercises.

Communication is an exchange of information: a sender transmitting messages to a receiver who thinks about the ideas and messages sent.

NOTE: See the illustration on the following page.

LEARNING ACTIVITIES - continued



1. Sender **2. Message** **3. Receiver**

The Sender

The sender will know that the receiver is thinking about the information when the receiver responds to, paraphrases, or repeats the information sent. If the receiver does not respond in one of these ways, the sender must ask questions or observe the receiver to see if the message was understood.

When the receiver does not answer the sender's questions accurately, or does not respond at all, it may be assumed that the two have not communicated successfully.

Situation:

Seven a.m.: Jane kisses Ralph as he leaves for work and says, "Ralph, pick up the clothes this evening." At 5:30, Ralph enters the kitchen empty-handed. Jane asks, "Where are the clothes?" Ralph replies, "You did not tell me to bring clothes." What went wrong? Compare the following communication:

Seven a.m.: Jane kisses Ralph as he leaves for work and says, "Ralph, there are two pairs of pants and a dress at Oliver's Cleaners at Drachman and Stone. Will you please pick them up on your way home from work?" At 5:30, Ralph enters the door with the pants and dress.

Do you see the difference?

The Message

Nursing is people-oriented and therefore calls for a high degree of skill in interpersonal relationships. This is the key to success. We cannot care for people unless we can relate to them. We cannot enjoy the satisfaction of being with people and working with them unless we can relate.

Basic honesty with ourselves and others, plus a warm and friendly feeling toward all, creates a climate of warmth, trust, and acceptance. When we have these, we will be able to relate—to touch people and satisfy their deepest hungers. This is nursing.

The depth and breadth of nursing practices are directly related to the nurse's ability to use communication skills to create nurse-patient, nurse-doctor and nurse-nurse interaction.

LEARNING ACTIVITIES - continued

Exercise 1.

A. If you are not precise when you give information, what could happen?

NOTE: Discuss with your instructor what you have written above.

B. If the doctor uses highly technical language when talking with a patient, how do you think the patient might feel or react?

NOTE: Discuss with your instructor what you have written above.

The Receiver

It is impossible for the receiver to communicate successfully without listening. Many communication problems are listening problems. Both the sender and the receiver should be aware of the following signs of poor listening:

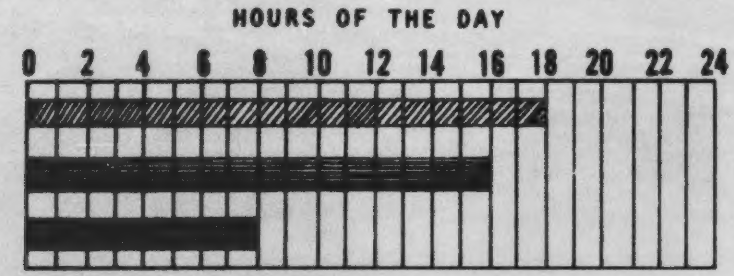
a. Daydreaming

b. Careless listening (making assumptions about the message)

c. Not concentrating (mind is not on what is being said)

d. Too busy thinking about other matters to listen (supper, the baby, the bills)

Did you know that the average person spends three-fourths of each day in oral communication?



LEARNING ACTIVITIES - continued

1. Approximately sixteen (16) hours each day are spent communicating.
2. Approximately eight (8) of these hours are spent listening. (Less for people who talk constantly.)

Listening Problems

Listening problems usually stem from a difference between the message sent and what is heard, or what the receiver thinks is heard, an ambivalent message. How can we solve these problems?

A. Listen earnestly.

1. Want to listen.
2. Demonstrate an interest.
3. Look at the speaker's eyes with interest.
4. Concentrate on the message. The majority of people speak 100 to 150 words per minute, and the mind can receive 400 to 1,000 words per minute. Listening problems often occur because the mind jumps to conclusions, or because thoughts of other things intrude on the mind. One solution to these problems is to ask questions.
5. Ask questions to get more information. This will help you understand the message and clarify its meaning.

A person speaks 100 to 150 words per minute.

The ear receives 400 to 1,000 words per minute.

B. Listen actively to understand the message.

1. Remove barriers to your listening. Ignore explosive words so you do not react to them. Explosive words might include:

liar
idiot
stupid
slob
clumsy
dumb
lazy
ignorant
slow
sloppy

LEARNING ACTIVITIES - continued

2. If something is said that upsets you, ask questions, or paraphrase. Then listen to the answer to get the message.

C. Listen receptively to the speaker. Prepare yourself to receive the message. Be aware that your emotions may interfere with your ability to listen.

D. Listen sensitively. Be aware of the speaker's emotions conveyed in the message. You may need to separate these emotions from the message sent.

Listening to patients means more than hearing words. It means listening to words while looking at the patient's overall behavior, posture, gestures, and facial expressions.

Example:

"I am happy," says the patient in a dull, monotonous voice, sitting on the bed, chewing fingernails, and rapidly swinging the right foot.

The nurse is concerned with the needs of the patient. These needs can be physical or psychological. Compare these two examples:

Example 1.

"Nurse, I am having a lot of pain. Please help me." The nurse says, "O.K. Did you know I had a surprise party for two dear friends last night? We had a great time."

Example 2.

The patient has just been informed of a "dreaded diagnosis." The nurse says nothing. But just by being there and merely touching the patient, conveys the message, "I can't say much (or, I don't know what to say) but I'm here, and I do care."

Speaking, listening, writing, and reading--all are forms of communication. Skill in listening is of primary importance in becoming a successful nurse.

If you observe the following rules, you will be a good listener!

1. A sincere, apparent interest in others is essential for effective nurse-patient communication, nurse-doctor communication, and nurse-nurse communication. We all know what it means to have someone take an interest in what we are saying and feeling. A genuine interest in others results when we can forget ourselves for the time being and listen to what the other person has to say.
2. Look at the person who is speaking to you. For example, glance at the patient even though you are making a bed, or charting. Let the person know you are listening.
3. Show that you have grasped the essential points by making brief, relevant remarks. "What happened then? What was that name?"

LEARNING ACTIVITIES - continued

4. Add an interesting comment occasionally. "That was nice." etc.

5. Learn to be comfortable during silent periods. Avoid talking constantly when the other person is silent.

6. Control the urge to express what is on your mind. Important! --Guard against matching the patient's tale with a bigger and better one of your own. If you do this, you may destroy the sick person's sense of importance and security.

7. Listen attentively so you can capture the emotional tones. Give the patient your full attention.

8. Look alert and animated (alive). Do not be critical of or offended by the speaker's choice of words. Many expressions mean different things to different people. For example, S.O.B. is a medical abbreviation for "Shortness of Breath"; in a surgical ward it means "See Order Blank"; in Washington, D.C. it stands for "Senate Office Building." Sometimes, it is profanity (swearing) and means ____ ______ ___ _______!

Paraphrasing

Paraphrasing is the act of restating the speaker's (sender's) message in the way the listener (receiver) heard it. Paraphrasing helps the receiver get clarification, and lets the sender check to see if the message was understood.

Practice paraphrasing today. This is a complicated way to communicate, but the rewards are great. Ask your instructor to help you with this assignment.

Exercise on Paraphrasing

1. Choose a group of three people to participate in these roles:

    a. Sender (speaker)

    b. Receiver (listener)

    c. Observer

2. Discuss this topic: Why I chose HOP, what my goal is, and where I will work.

    a. The discussion continues for three to five minutes, with the speaker doing most of the talking. Asking questions is avoided.

    b. The receiver listens and responds to the speaker by asking questions.

    c. At the end of the conversation, the receiver paraphrases the sender's message.

    d. The observer observes the communication process and reports observations when the conversation is over. The time limit is three to five minutes.

    e. Let each member of the group take a turn as the sender, receiver, and the observer.

LEARNING ACTIVITIES - continued

Giving Feedback

Feedback is a method of giving evaluative or corrective information to a person or persons. You must be assessed as caring about a person in order to give useful feedback. If not, the person will not accept the feedback and may conclude that it is dishonest.

Guidelines for Giving Feedback

1. Give feedback to help a person.
2. Give feedback on facts, observations, or information.
3. Give specific feedback on facts, observations, or information. "It is 0700, training begins at 0645," rather than "You're late, as usual."
4. Give feedback on facts, not judgments. "You have had two breaks in the last hour," not, "You're lazy."
5. Check your feedback for accuracy. "You appear to be angry. Are you?" "No, I'm confused."

Exercises on Feedback

1. In this exercise, ask another student to be your patient and a third student to observe. Use one of the following role playing situations, or make up your own.

   a. A six-year-old child has just been admitted to the hospital. The mother has left the hospital and the child is crying loudly.

   b. An 86-year-old man has been in the hospital for two weeks and has not had any visitors. He appears very quiet and depressed.

      1. Practice feedback with these people, using the guidelines given above.
      2. Have the observer give you information on your feedback, based on the guidelines.

2. Define communication. ____

   ____

   ____

LEARNING ACTIVITIES - continued

3. Name the three parts of communication.

   a. ____________________

   b. ____________________

   c. ____________________

4. Define feedback. ____________________

   ____

5. Message: "Mrs. Romero, please take the patient, Mr. X in 335 Bed #1 to the third floor. Hurry, Doctor Zen is waiting."

   a. Define the problem:

   ____

   ____

   b. Clarify the message:

   ____

   ____

   Discuss your answers with your instructor.

Nonverbal Communication

What is nonverbal communication? Look at this phrase and define each part:

1. Non means no.
2. Verbal means sounds or words.
3. Communication means sending a message.

Nonverbal Communication therefore means no words or sounds to send a message. Stated more clearly, nonverbal communication means sending a message without using words or sounds.

Directions: Circle the words below which are methods of nonverbal communication.

1. laughing
2. waving
3. writing
4. staring at a blank wall
5. a slap
6. smiling

LEARNING ACTIVITIES - continued

7. talking
8. frowning
9. tears in one's eyes
10. screaming
11. stroking one's back
12. a hug
13. holding a friend's hand
14 a kiss
15. the freedom handshake
16. raised eyebrows
17. foul language
18. walking very slowly
19. holding your head
20. hand over mouth

Check your answers with those given on the last page of this module.

It is possible to establish successful nonverbal communication. There are times when this is the only way a person is able, or chooses, to communicate.

It is important that you use this method of communication in the health care facility. If it makes you uncomfortable to touch a person, talk to your instructor who may be able to help you overcome this. Perhaps nursing should not be your job goal. Why?

Interaction

The interaction between the health care worker and patient in the actual clinical situation is a dynamic process. The nurse gathers clues about what the patient is thinking and feeling by observing the sick person's movements, verbalizations, and so on. Likewise, the patient assembles information about the nurse in much the same way. The nurse communicates support through facial expressions, tone of voice, type of voice, physical contact with patients, attitude toward patients and fellow workers, or verbal expression.

The health care worker's facial expression may communicate warmth, friendliness, sincere interest; or, it may reflect aloofness, annoyance, irritation, disinterest. Facial expression may reveal a natural and relaxed feeling; or, it may be "sphinx-like" or artificially over-responsive.

Pitch, timbre (the quality of speech sound), tone, and voice rhythm can communicate interest and acceptance; or they can convey disinterest, lack of acceptance, and a variety of other supportive and non-supportive attitudes. The voice may be tense, irritable and monotonous; or, it may be relaxed, pleasant, and free from monotony.

Communication also comes through physical contact with patients--a warm handshake, a hand on the patient's arm or shoulder, or a supportive arm around the patient's waist.

One's attitude toward patients, toward fellow workers, and toward doctors, should convey respect and politeness. "Thank you" is easy to say. Increase your patients' sense of personal worth by addressing them by name. Accept the people as they are. Be nonjudgmental.

LEARNING ACTIVITIES - continued

In verbal expression, tact must be exercised. Avoid thoughtless remarks like, "Don't worry." Offer verbal reassurance only when there is a valid reason for statements like, "Everything is going to be all right."

If people frequently misinterpret your nonverbal communication, what should you do? Take the following precautions:

1. Never assume that you have interpreted the nonverbal communication correctly. Check it out! Inquire verbally if the patient has pain, or is depressed, etc. Get the facts.
2. Never assume that you have successfully communicated nonverbally. Observe the patient's reaction.
3. Be sure you are conveying the messages you think you are. If you are uncertain whether or not you have been understood, get clarification.

Exercises on Nonverbal Communication

1. List three (3) problems you think may be caused by nonverbal communication.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   Discuss your answers with your instructor.

2. Using the following emotions, practice nonverbal communication with another student:

   a. pain

   b. fear

   c. pleasure

   d. boredom

   Check feedback to see if the emotions you are role playing have been understood.

3. List two types of communication. If you cannot list them, check with your instructor.

   a. ______________________________

   b. ______________________________

   Discuss your answers with your instructor.

LEARNING ACTIVITIES - concluded

Your instructor expects you to practice communicating in the health care facility. Here are some guidelines to help you communicate correctly.

1. Listen carefully.
2. Do not interrupt. When the sender has finished talking, you may ask questions and paraphrase.
3. Encourage and assist patients to talk about themselves. Avoid conversation about yourself, especially concerning your personal problems!
4. Be available to communicate with all patients when you have free time. Make rounds to all patients.
5. Feel free to sit down with patients to communicate verbally and nonverbally.

I LIKE NONVERBAL COMMUNICATION! HOW ABOUT YOU?

ANSWERS

ACTIVITY #3

Nonverbal Communication, pages 9 and 10

2, 4, 5, 6, 8, 9, 11, 12, 13, 14, 15, 16, 18, 19, 20

unit 2

COMMUNICATION AND BEHAVIOR

Module B - Written Communication

RATIONALE

Writing is a method of communication. This module will prepare you to chart your observations on the patients' records.

PERFORMANCE

To the instructor's satisfaction, you will:

1. Identify 10 of 20 medical abbreviations.
2. Demonstrate writing observations, using correct medical abbreviations, as you complete your clinical assignments.

LEARNING ACTIVITIES

All the information you need to meet the objectives is included in this module, If you have any problems, please ask your instructor to help you.

ACTIVITY #1. Abbreviations

Directions: Learn the following abbreviations and their meanings. If you need any further information, please remember to ask for help.

Abbreviation	Meaning	Abbreviation	Meaning
1. a.c.	before meals	9. ff	force fluids
2. ad lib	as desired	10. h or hr	hour
3. a.m.	morning	11. hs	hour of sleep (bedtime)
4. bid	twice a day	12. H_2O	water
5. B/P	blood pressure	13. I&O	intake and output day
6. BRP	bathroom privileges	14. IV	intravenous
7. c̄	with	15. NPO	nothing by mouth (fasting)
8. cl. liq.	clear liquid	16. OOB	out of bed

LEARNING ACTIVITIES - continued

17.	p.c.	after meals
18.	p.m.	evening
19.	prn	when needed, required, necessary
20.	qd	every day
21.	qod	every other day
22.	qid	four times a day
23.	q2h	every two hours (fasting)
24.	qh	every hour
25.	qhs	every night
26.	$\bar{s}$	without
27.	stat	immediately - now
28.	tid	three times a day
29.	v.s.	vital signs
30.	wt.	weight

Directions: Write the abbreviations for the following.

1. after meals __________
2. as desired __________
3. bathroom privileges __________
4. before meals __________
5. blood pressure __________
6. clear liquids __________
7. evening __________
8. every day __________
9. every hour __________
10. every night __________
11. every other day __________
12. every two hours __________
13. force fluids __________
14. four times a day __________
15. hour __________
16. hour of sleep __________
17. immediately __________
18. intake and output __________
19. intravenous __________
20. morning __________
21. nothing by mouth __________
22. out of bed __________
23. three times a day __________
24. twice a day __________
25. vital signs __________
26. water __________
27. weight __________
28. when necessary __________
29. with __________
30. without __________

NOTE: Check your answers with the abbreviations you learned in this activity.

LEARNING ACTIVITIES - continued

Directions: Interpret the following phrases by writing the meaning of the abbreviations.

1. Check urine ac and pc ____________________
2. OOB ad lib ____________________
3. Bedrest c̄ BRP ____________________
4. Warm milk at hs ____________________
5. V.S. qid and B/P bid ____________________
6. ff cl. liq. diet strict I&O ____________________
7. May visit c̄ husband every p.m. ____________________
8. Check wt qd ac for 3 days then qod ____________________
9. Check pulse qh ____________________
10. Check pupils q2h for 24 hours then q8h ____________________
11. Check IV stat ____________________
12. Report to doctor in a.m. ____________________
13. NPO for today start cl. liq. tomorrow ____________________
14. To physical therapy tid today & bid Sunday ____________________
15. H_2O at bedside stat and prn ____________________
16. May walk c̄ walker ____________________
17. Discharge s̄ prescriptions ____________________

NOTE: Check your answers with the abbreviations you learned in this activity.

ACTIVITY # 2. Written Communication

Directions: Read the following:

Writing is a convenient way to communicate successfully. You will be given a written assignment at the health care facility. Examples of some of the forms you will be using are shown at the end of this module.

It is important that you refer to these assignment sheets to know what you must do and when to do it. As you complete your assignment, it is essential that you keep an accurate record of the treatments with which you have assisted a patient, and your observations of the patient's responses.

LEARNING ACTIVITIES - concluded

Example:

Assignment sheet states:

1. Ambulate in room qid.

   Observation: 08:00 Ambulated to chair without pain.

2. Check dressing.

   Observation: 07:00 Dressing clean, dry and intact -- lower abd.

Your assignment is to turn in to your instructor the observations you make each week on assigned patients in the clinical area.

Look at the sample assignment sheets on the following pages of this module.

ASSIGNMENT SHEET — *Example #1* — Teaching Sample Only

Room No.	Patient's Name	Diagnosis	Activity	Bath Special Skin Care	BM	Diet Appetite	I & O	Vital Signs	Treatments Special Instructions	Comments by Team Member

Team Member:

Team Leader:

Special Assignment:

Lunch:

Coffee:

Conference Time:

Topic:

EXAMPLE OF ONE ASSIGNMENT SHEET USED IN SOME HOSPITALS

ASSIGNMENT SHEET

ROOM # : ______

NAME: ______

DIAGNOSIS: ______

OBSERVATIONS:

DIET: ______ **Breakfast:** G F P
Lunch: G F P

ACTIVITY: ______

HOW DID PATIENT DO? ______

Skin Condition? ______

BATH: ______ **Circulation?** ______

B.M. & VITALS?: 8 - T ___ P ___ B/P ___
12 - T ___ P ___ R ___ B/P ___

DID YOU RECORD THEM? ______

Intake & Output: YES ___ NO ___ **Recorded?** ______

Comments: ______

______

______

TIME:
Is patient awake, asleep, afraid, comfortable? ______

DRESSINGS: YES ___ NO ___
CLEAN: ___ DRY: ___ SOAKED: ___
CHANGED BY: ______

TUBES: YES ___ NO ___
TYPE: ______
DRAINAGE: YES ___ NO ___
COLOR: ______
AMOUNT ______

FOLEY CATHETER: YES: ___ NO ___
COLOR: ______
AMOUNT: ______

IV: YES ___ NO ___
NAME: ______
SITE: ______
ON TIME: YES ___ NO ___

OTHER: ______

Cough: dry moist

Pain: WHERE: ______
SEVERE: ______
MODERATE: ______

Gas: ______

Nausea and/or vomiting: ______

ASSIGNMENT SHEET — *Example #2* — Teaching Sample Only

2.B.6

TEAM LEADER______________

NURSING ASSIGNMENT SHEET

NAME______________________________

DATE______________

ROOM	PT./DIAGNOSIS	BATH	ACTIVITY	DIET	FLUIDS	(care) Rx.	OTHER	COMMENTS
		BED SELF ASSIST SHOWER TUB SITZ	BEDREST TURN______ BRP UP AD LIB AMB HELP DANGLE CHAIR W/C BSC. P.T.	REGULAR SOFT SPECIAL __________ CL. LIQ. FULL LIQ. TUBE FEED FEED ASSIST	FORCE NPO LIMIT IV ICE CHIPS DIST H_2O INTAKE OUTPUT	ORAL FOLEY PERI BACK H.S. TCDB ENEMA 02	CLINITEST____ V.S.__________ __________ NEURO CHECK ____________ WEIGH______ QUIAC______ SPECIMEN ____________	
		BED SELF ASSIST SHOWER TUB SITZ	BEDREST TURN______ BRP UP AD LIB AMB HELP DANGLE CHAIR W/C BSC. P.T.	REGULAR SOFT SPECIAL __________ CL. LIQ. FULL LIQ. TUBE FEED FEED ASSIST	FORCE NPO LIMIT IV ICE CHIPS DIST H_2O INTAKE OUTPUT	ORAL FOLEY PERI BACK H.S. TCDB ENEMA 02	CLINITEST____ V.S.__________ __________ NEURO CHECK ____________ WEIGH______ QUIAC______ SPECIMEN ____________	
		BED SELF ASSIST SHOWER TUB SITZ	BEDREST TURN______ BRP UP AD LIB AMB HELP DANGLE CHAIR W/C BSC. P.T.	REGULAR SOFT SPECIAL __________ CL. LIQ. FULL LIQ. TUBE FEED FEED ASSIST	FORCE NPO LIMIT IV ICE CHIPS DIST H_2O INTAKE OUTPUT	ORAL FOLEY PERI BACK H.S. TCDB ENEMA 02	CLINITEST____ V.S.__________ __________ NEURO CHECK ____________ WEIGH______ QUIAC______ SPECIMEN ____________	
		BED SELF ASSIST SHOWER TUB SITZ	BEDREST TURN______ BRP UP AD LIB AMB HELP DANGLE CHAIR W/C BSC. P.T.	REGULAR SOFT SPECIAL __________ CL. LIQ. FULL LIQ. TUBE FEED FEED ASSIST	FORCE NPO LIMIT IV ICE CHIPS DIST H_2O INTAKE OUTPUT	ORAL FOLEY PERI BACK H.S. TCDB ENEMA 02	CLINITEST____ V.S.__________ __________ NEURO CHECK ____________ WEIGH______ QUIAC______ SPECIMEN ____________	

ASSIGNMENT SHEET — *Example #3* — Teaching Sample Only

2.B.7

unit 2

COMMUNICATION AND BEHAVIOR

Module C - Human Behavior

RATIONALE

The module will help you look at your behavior. When you complete the module you should recognize and change negative aspects of your own behavior.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify the definitions for 4 of the 10 terms given in Activity #1 of this module.
2. Identify positive and negative behavior.
3. Observe and report behavioral observations to the nurse in charge, or your instructor.
4. Demonstrate positive behavior.

LEARNING ACTIVITIES

Directions: All the information you need to meet the objectives is included in this module. Remember, if you have problems, ask your instructor for help.

ACTIVITY #1. Terms

Directions: Consult the terminology section of this unit. Learn the following terms and their definitions.

1. behavior
2. motivation
3. attitudes
4. anxiety
5. negative behavior
6. positive behavior
7. stress
8. culture
9. trust
10. peer group

LEARNING ACTIVITIES - continued

ACTIVITIY #2. Behavior

Directions: Read the following.

Behavior is the manner of acting, functioning, and reacting in a particular way.

Why do we act the way we do? All behavior is learned. We start to learn to behave in a cetain way when we are infants. When babies are wet, they cry, and someone changes their diapers; when they are hungry, they cry, and someone feeds them. When babies are lonely, they cry, and sometimes someone holds them or talks to them. In other words, basic emotional and physical needs are met by our parents or other adults.

As infants, we learn an important attitude. This attitude influences our relationships throughout our lives and is called TRUST. As infants we learn to trust our immediate environment to provide us with important needs. If, as adults, we cannot trust people, we have probably not learned trust as a child.

Review: Children usually have their basic emotional needs for love and approval provided by parents. Children have their physical needs for food, shelter and comfort met when parents feed them, change their wet diapers, and maintain their body temperature with clothing. When this cycle is adequate, the child learns trust; if not, the child may lack trust.

Children's behavior is learned from their immediate environment and from their parents. Adolescent behavior is determined by peer group influence. Adolescents seek approval and acceptance of their behavior by their peer group. Adult behavior is a series of automatic behavioral responses learned as a child, as an adolescent, and as an adult.

ACTIVITY #3. Adult Behavior

Directions: This activity concerns adult behavior. Read and consider this information.

FACT--The only behavior we can change is our own! Adult behavior can be positive or negative. Positive behavior is behavior that does not cause conflict or disagreement. Positive behavior brings about good feelings, cooperation and progress.

Examples of positive behavior:

1. Helping co-workers when they need help

2. Being dependable

Negative behavior is behavior that causes conflict, stress, or disagreement. Negative behavior blocks progress.

LEARNING ACTIVITIES - continued

Examples of negative behavior:

1. Never volunteering to help co-workers
2. Being absent frequently
3. Continually focusing on one's own personal problems

WE CAN CHANGE OUR NEGATIVE BEHAVIOR! Before we can successfully change our behavior, we must first see a need to change it. This means we must understand that we have a problem. Until we believe that we have a problem, we cannot change our behavior.

We, as instructors, may tell you that we observe (see) you demonstrating negative behavior. We will state what the behavior is, and suggest what the cause of the behavior may be. We may also suggest what changes in behavior you should think about making. Hopefully, you will change your behavior when you understand your problem and consciously decide it is time to change your behavior.

When people are subjected to stress, negative behavior frequently results. Your patients may experience pain, anxiety, and stress. The presence of these factors may cause them to demonstrate negative behavior. It is your duty to observe and to report their behavior; it is not your job to judge behavior as negative or positive.

Compare these two student nurse reports:

1. Mrs. Benny is uncooperative and difficult. She did not get out of bed until 11:00. I could not make up her bed until she got up; therefore, I went to lunch late.
2. Mrs. Benny ate 50% of her breakfast. She stated that she slept poorly last night. She rested in bed until 11:00. At 11:00 she got out of bed, bathed, and walked to the activity room.

Which report describes the patient? ______________________________

Which report describes the nurse? ______________________________

Directions: Compare the following examples of positive and negative behavior:

	Positive Behavior	Negative Behavior
1.	Arrives at work on time or early	Frequently late for work
2.	Checks out assumptions by asking questions	Makes assumptions and acts on assumptions
3.	Makes use of all listening skills	Fails to give full attention

LEARNING ACTIVITIES - continued

	Positive Behavior - continued	Negative Behavior - continued
4.	Expresses personal concerns about training to instructors	Appears upset, angered at demands of instructor
5.	Takes part in all training activities	Fails to participate in classroom activities
6.	Awake and alert in the lab and clinical area	Appears bored, sleepy, and preoccupied in the lab and clinical area
7.	Makes use of free time by reading assignment	Reads unrelated material during free time
8.	Follows schedules	Does not follow schedules
9.	Waits for test results	Wants immediate results of test
10.	Attempts to make changes in behavior as indicated.	Repeats behavior when recommendations are made for change
11.	Makes use of free time in the clinical area by talking to patients, reviewing charts, etc.	Takes coffee breaks at other than assigned time
12.	Discusses with instructor anxieties and concerns about patient assignments	Refuses patient assignment or repeatedly asks for changes
13.	Present for class and clinical assignments	Frequently absent
14.	Makes use of free time for personal appointments	Makes personal appointments during training hours

You are expected to demonstrate adult, mature behavior. To successfully achieve your goal, the behavior you demonstrate in the health care facility must be positive. One recommendation for improving behavior is to review your performance each week to see if you are making progress toward what you wish to accomplish.

Each month your instructor will discuss with you, personally, your performance and behavior as observed in the lab and the health care facility. This discussion, and the recommendations suggested, will assist you in your personal growth and development, and the attainment of your job goal. If you or your instructor have observed any negative behavior, write out methods you will use to change this to positive behavior.

LEARNING ACTIVITIES - concluded

Example 1:

Negative Behavior - Tardy six out of twenty days this month. Two ways to change this behavior:

Positive Behavior - Leave at 0615 from home, instead of 0630

Positive Behavior - Refuse to wait for a rider who is not ready a 0615

Example 2:

Negative Behavior - Assignments turned in late

Positive Behavior - Set up daily goals and work to meet them

Positive Behavior - Complete assignments at home

COMMUNICATION AND BEHAVIOR

Module D - Ethical Behavior

RATIONALE

All professions have ethics. These ethics provide guidelines for the actions of people working within a profession. This module will help you become aware of the ethics of your profession, and show you how to apply these ethics to your professional behavior.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify ethical behavior in given situations.
2. Demonstrate ethical behavior.

LEARNING ACTIVITIES

Directions: All the information you need to meet the objectives is included in this module. If you have problems, ask your instructor for help.

ACTIVITY #1. Ethics

Directions: Read the following.

Ethics is defined as a set of principles or values governing good moral behavior. As a health care worker, you must conduct yourself according to accepted professional standards. All ethical behavior demonstrates respect for the needs and rights of others, especially those with whom you are associated in your profession.

Guidelines For Ethical Behavior

1. Try to accept behavior you do not understand.
2. Try to see all situations from the point of view of the person in authority.
3. Try to see all situations from the point of view of the patient.
4. Try to cultivate a real desire to give care to the sick, the elderly, and the helpless.

Health Care Facility Ethics

Review the following list of ethical behavior as applied by the health care worker:

1. Be accurate.
2. Discuss information concerning patients in conference or lab only.

LEARNING ACTIVITIES - continued

3. Take proper care of equipment and supplies.
4. Treat co-workers with respect and courtesy.
5. Perform your assignment as instructed.
6. Perform only those tasks you have learned.
7. Before you start an assignment, ask questions to be sure you understand it.
8. Do not take supplies home.
9. Avoid all inappropriate behavior.
10. Refuse to accept any expensive, personal gifts or money from patients.
11. Discuss confidential information only with the nurse in charge or the physicians.
12. Report all accidents or errors immediately.
13. Do not tell others your patients' confidences or secrets unless the information is harmful and/or may harm someone; then tell the nurse in charge.
14. Avoid arguing with patients and/or their families.
15. Respect the patients' right to privacy.
16. Maintain patients' safety.
17. Refer all questions about the patients' condition to the nurse in charge.
18. Be loyal to the health care facility.
19. Be loyal to co-workers.
20. Observe and follow health care facility rules and policies.
21. Treat older patients with dignity.
22. Treat dying patients with dignity.
23. Discuss your private affairs with persons who can assist you, not the patients.
24. Respect patients' rights and needs.
25. Be courteous and kind.

LEARNING ACTIVITIES - continued

Fundamentals of Ethics

1. Ethics is a set of principles or values governing good or bad behavior. These principles are based on moral law.
2. Ethical behavior is required of all those who aspire to become members of the professional nursing team. Concentrated effort is necessary to learn and apply ethical behavior.
3. Ethical behavior means that all nursing personnel will refrain from activities that might reflect negatively on the nursing profession.
4. Ethical behavior includes being courteous, honest, and considerate.
5. Unethical behavior includes rudeness, and the use of slang in the presence of a patient whom it may offend.

A Code of Ethics for the Nursing Profession

1. The primary job of the nurse is to preserve life and to promote health.
2. The health care worker must be adequately prepared to work in a health care facility and must keep up to date by reading, studying, observing, and questioning.
3. When patients require constant care, the health care worker must remain with these patients until adequate relief is provided.
4. Health care workers must respect the religious beliefs of patients.
5. All personal and professional knowledge given to a health care worker must be kept confidential.
6. The health care worker must report any observations that should be brought to the doctor's attention.
7. The health care worker must recognize limitations, and stay within these limitations.
8. Health care workers must seek clarification if they have any doubts or questions.
9. Health care workers must carry out the physician's orders and verify these orders to avoid errors.
10. Health care workers must refuse to participate in unethical procedures and must report such unethical procedures to the proper authorities.
11. Health care workers must be loyal to co-workers and employers.
12. Health care workers must give conscientious service, and refuse all tips or bribes.

LEARNING ACTIVITIES - continued

13. Health care workers must not permit their names to be used in connection with testimonials, or in the advertisement of products (except to assist in the distribution of scientific knowledge).

14. Health care workers must respect the property of patients and of the health care facility.

15. During employment, the health care worker must follow the policies and the regulations of the health care facility.

16. In personal and private life, the health care worker must maintain high standards of personal ethics.

17. The health care worker must assume responsibility to promote efforts to meet the health needs of the public.

18. As a citizen, the health care worker must make an effort to understand and to obey the laws of the community, and exercise the privileges of citizenship.

19. The health care worker must maintain membership and participate actively in the local, state, and national nursing organizatons.

20. The health care worker must give service to all patients.

Can you comply with all of these standards ("musts") which will be expected of you in your career as a health care worker?

Good Manners

Ethical behavior and good manners go hand-in-hand. Good manners are simply courteous behavior that makes other people feel comfortable and at ease. Some basic rules of good manners include the following:

1. Avoid being conspicuous.
2. Help people who are anxious, or uncomfortable with their surroundings, feel more at ease.
3. Consider the comfort and feelings of others.

Directions: Complete the following in your own words.

Define ethics: ______________________________

____

____

LEARNING ACTIVITIES - concluded

Directions: List ten (10) ways you will apply ethical behavior as a health worker:

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________
7. ______________________________
8. ______________________________
9. ______________________________
10. ______________________________

Check your answers with the information you have read in this module.

unit 2

COMMUNICATION AND BEHAVIOR

Module E - Legal Behavior

RATIONALE

Health care workers must assume legal responsibility for their behavior. This lesson will acquaint you with legal terms.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify definitions of 8 of the 11 terms in Activity 1 of this module (legal vocabulary).

2. Identify ethical and legal behavior in given situations.

3. Describe in writing, two (2) situations involving illegal behavior.

LEARNING ACTIVITIES

Directions: All the information you will need to complete the objectives is included in this module. If you have problems, ask your instructor for help.

ACTIVITY #1. Legal Vocabulary

Directions: Consult the Terminology section of this unit. Study the terms; then write the definition of each term given below.

1. legal ______________________________

2. liable ______________________________

3. negligence ______________________________

4. defamation of character ______________________________

5. slander ______________________________

6. invasion of privacy ______________________________

7. felony ______________________________

8. license ______________________________

9. profession ______________________________

10. malpractice ______________________________

11. tort ______________________________

LEARNING ACTIVITIES - continued

Directions: Without referring to the Terminology section of this unit, define the following legal terms in your own words.

1. liable ____
2. negligence ____
3. defamation of character ______________________________
4. slander ____
5. legal ____
6. invasion of privacy ________________________________
7. profession ____
8. tort ____
9. felony ____
10. malpractice ____

Directions: Complete the following exercise by adding the correct missing terms in the spaces provided.

1. __________ is a legal term for being responsible in a legal sense.
2. __________ is negligence demonstrated by a professional person.

LEARNING ACTIVITIES - continued

3. __________ results when one person fails to live up to an agreement.

4. __________ may result if unethical behavior persists.

Directions: Circle the letter preceding the word which has no relationship to the other two words. The first one is completed for you.

1. a. liable
   [✓ b.] label
   c. libel

2. a. slander
   b. defame
   c. true

3. a. ethics
   b. morality
   c. quackery

4. a. invasion of privacy
   b. defamation
   c. maladjustment

5. a. tort
   b. helpful
   c. harmful

6. a. HOP
   b. state board of nursing
   c. nurse's license

7. a. licensure
   b. legal permit
   c. criminal

8. a. team leader
   b. janitor
   c. registered nurse

9. a. fear of death
   b. fear of financial loss
   c. happy with pain

10. a. job interview
    b. job placement
    c. termination

11. a. conduct
    b. behavior
    c. breach

12. a. legal
    b. ethical
    c. health

13. a. expired
    b. deceased
    c. alive

14. a. manners
    b. privacy
    c. etiquette

15. a. patient
    b. sick
    c. crime

ACTIVITY #2. Situations Involving Illegal Behavior

Directions: Read the following:

The following is an example of illegal behavior: Your assignment reads, "ambulate patient in hall t.i.d." Your behavior as a student was to assist the patient to a chair in the room. Your charting states, "ambulated to nurses' station t.i.d." The charting is illegal because your charting is not a true account of your behavior. The charting is false.

LEARNING ACTIVITIES - concluded

Now it's your turn. What are some situations you can think of that are illegal?

Using the space provided below, write an account of two situations involving illegal behavior. When you have completed the exercise, show your instructor what you have written.

Some topics you may use:

1. medications
2. patient injury
3. slander
4. charting

Situation 1.

____

____

____

____

____

Situation 2.

____

____

____

____

____

ANSWERS

ACTIVITY #1

1. b
2. c
3. c
4. c
5. b
6. a
7. c
8. b
9. c
10. c
11. c
12. c
13. c
14. b
15. c

TERMINOLOGY

The following is a list of terms, together with the definitions of each. These are the terms you should recognize and understand for the successful completion of Unit 2 of the Health Occupations Program. Directions for studying and using them are given in the modules for the unit.

ANXIETY:	An apprehensive uneasiness of mind. (Perhaps caused by prospective surgery, concern about a diagnosis, etc.).
ASSUMPTION:	A fact or statement taken for granted.
ATTITUDE:	A natural feeling or emotion about a person or thing.
BEHAVIOR:	The manner of conducting oneself (acting and functioning).
BREACH:	To break. As to break a contract.
BREACH OF CONTRACT:	Breaking of a contract or agreement.
COMMUNICATION:	Coveying or sending information.
COPE:	To deal with and attempt to overcome problems and difficulties.
CRIME:	Any act which violates a law--usually not a misdemeanor.
CRIMINAL ACTIVITY:	The act of violating a law.
CULTURE:	Lifestyle. A pattern of living of a person or a particular group, determined by speech, values, etc.
DEFAMATION OF CHARACTER:	Making derogatory remarks about a patient; a wrongful act meaning to injure the reputation of another person.
DEROGATORY:	Negative statement about a person.
EMOTIONS:	A mental state of strong feeling, usually accompanied by physical change.

TERMINOLOGY - continued

ETHICS:	A set of principles or values governing good moral conduct and the standards of right and wrong.
ETIQUETTE:	Good, acceptable manners.
FEEDBACK:	Giving information from the information received.
FELONY:	A grave crime.
GESTURES:	The use of motions of the limbs, body, and face to convey a message.
INVASION OF PRIVACY:	Unauthorized disclosures about the patient's personal or private life. Examples: photographs, shop talk, gossip, facts about an accident case.
LIABLE:	Legally responsible; legal responsibility to account for one's wrongful actions by making financial restitution to the injured party.
LIBEL:	Written defamation.
LICENSE:	Legal permit to practice nursing.
LICENSURE:	Process of obtaining a license.
LISTENING:	Hearing a message.
MALPRACTICE:	Negligence by a professional person.
MATURE:	Having completed natural growth; having reached a high level of emotional growth.
MESSAGE:	A body of information, facts, and directions sent to a person.
MISDEMEANOR:	A crime less serious than a felony.
MOTIVATION:	The factors or incentives determining behavior.
NEGATIVE:	Something that is the opposite of or negates something positive.

TERMINOLOGY - continued

NEGLIGENCE:	Neglect of a physician or nurse to apply that degree of skill and learning which is customarily applied in treating a patient; the failure to do something that should be done in a given situation.
NONVERBAL COMMUNICATION:	Sending information without using words.
PARAPHRASING:	Repeating the message sent, using different words.
PEER GROUP:	A group of people in which all members have equal standing of age, class, rank etc.
POSITIVE:	Definite, affirmative; positive means used to reach a goal.
PRIVILEGED COMMUNICATION (information):	The information given to the doctor or nurse by the patient in order to receive medical treatment; (name, address, sex, marital status, age, occupation, employer, name and address of nearest relative).
PROFESSION:	A vocation or calling requiring a specialized body of knowledge.
RECEIVER:	A person getting (receiving) a message.
SENDER:	A person sending (conveying) a message.
SLANDER:	Oral (spoken) defamation.
STATE BOARD OF NURSING:	A group of licensed practicing nurses appointed by the Governor to review applications for and administer licensing examinations. This board also enforces nursing practice laws.
STRESS:	A physical, chemical, or emotional factor that causes bodily or emotional tensions.
TACT:	A keen sense of what to do or say in order to maintain good feelings.

TERMINOLOGY - concluded

TORT:	A negligent act resulting in an injury.
TRUST:	Dependent on something or someone. Hope.
VERBAL COMMUNICATION:	Sending information using spoken words.
WRITING:	Conveying a message through symbols placed on paper.

POST TEST

Modules A and B

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. An example of nonverbal communication is:

   a. talking
   b. groaning
   c. frowning
   d. writing

2. Communication may be defined as:

   a. comparing information
   b. gleaning information
   c. seeking information
   d. exchanging information

3. Gestures are an example of:

   a. nonverbal communication
   b. verbal communication
   c. listening
   d. paraphrasing

4. Mary told Sue that her hair was too long and too dirty. Mary is the:

   a. message
   b. receiver
   c. sender
   d. feedback

5. Mary told Sue that her hair was too long and dirty. Sue is the:

   a. message
   b. receiver
   c. sender
   d. feedback

6. To paraphrase correctly, the receiver must:

   a. give feedback
   b. state emotions perceived
   c. restate the message sent
   d. repeat the message as sent

POST TEST - concluded

7. Reacting to explosive words like "stupid" will result in a:

   a. sender problem
   b. feedback problem
   c. speaker problem
   d. listening problem

8. If Mrs. Smith says that she is fine but you know that she has problems sleeping, and is observed to be staring into space, she may be communicating a different message:

   a. through feedback
   b. through nonverbal communication
   c. through paraphrasing
   d. through smell

9. Mr. Jones is going to surgery in two hours. He is pacing the floor and wringing his hands. You tell the nurse he is depressed. To confirm this observation, the nurse will:

   a. paraphrase the message you sent
   b. call the doctor to cancel surgery
   c. cancel surgery and report to the patient
   d. ask the patient if he is fearful of surgery

10. The patient you are feeding speaks and understands only French. You will communicate:

    a. verbally
    b. nonverbally
    c. in writing
    d. not at all

11. Write the meaning of each of the following abbreviations on the lines provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.

    a. ad lib
    b. NPO
    c. qid
    d. q2h
    e. bid
    f. tid
    g. ff
    h. a.c.
    i. BRP
    j. prn

ANSWERS TO POST TEST

Modules A and B

1. c
2. d
3. a
4. c
5. b
6. c
7. d
8. b
9. d
10. b

a. as desired

b. nothing by mouth

c. four times a day

d. every 2 hours

e. 2 times a day

f. three times a day

g. force fluids

h. before meals

i. bathroom privileges

j. as often as necessary

POST TEST

Modules C, D, and E

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. The total response or action you make to any given situation is known as:

   a. culture
   b. dependence
   c. motivation
   d. behavior

2. All apprehensive uneasiness of mind is a definition of:

   a. motivation
   b. anxiety
   c. stress
   d. behavior

3. Incentives causing you to behave in a certain way is one definition of:

   a. motivation
   b. anxiety
   c. stress
   d. behavior

4. A feeling about a person or thing is the definition of the term:

   a. anxiety
   b. trust
   c. stress
   d. attitude

5. An example of positive behavior is:

   a. asking a fellow trainee what is on the post test
   b. having a good excuse for not passing a post test
   c. demonstrating dependency
   d. questioning confusing information

6. Another example of positive behavior is:

   a. arriving at work only five minutes late
   b. leaving work only five minutes early
   c. reporting all unusual patient behavior
   d. requesting changes in patient assignments

POST TEST - continued

7. Your co-workers are discussing the patient in 624 in the cafeteria. You should:

   a. ask for the diagnosis
   b. report the situation to the physician
   c. tell them to shut-up
   d. suggest a conference on the unit

8. The patient in 504 asks you to accept $20. You should:

   a. say you can only accept $10
   b. say you are not allowed to accept money
   c. report the situation to the nurse in charge
   d. take the money

9. You need a new thermometer at home. You should:

   a. buy one at the drugstore near your home
   b. borrow one from the central supply cart
   c. ask the team leader to get you one
   d. use the patient's during your break

10. The patient in room 728 asks if you are married. Your response should be:

    a. "No, I'm divorced with three children."
    b. "No, I'm not, but tell me about you."
    c. "Yes and no, I have a special friend."
    d. "No, I'm available."

11. You are scheduled for back surgery next month and you are concerned. To help your adjustment, you should:

    a. talk about it with another nursing assistant
    b. talk with the patient in the ward who had a similar back surgery
    c. ask the patients how they feel
    d. talk with the nurse in charge

12. Mrs. Mix asks you if Dr. Lend is a good doctor. Your response is:

    a. "I do not know your doctor, is he an American?"
    b. "I will ask the patient in 604."
    c. "Why did you choose him if you do not know him?"
    d. "Dr. Lend is very good with his patients."

13. Mrs. Jarves returned from surgery one hour ago. When you answer her light, you find her crying and she asks you if she has cancer. Your response to her should be:

    a. "Yes, you have a slight malignancy."
    b. "Of course you do not have cancer."
    c. "I do not think you have cancer. I will find out."
    d. "Would you like to talk to the nurse?"

POST TEST - continued

14. Being legally responsible for your behavior is a definition of the term:
    a. liable
    b. legal
    c. license
    d. ethics

15. Failure to raise bed side rails is an example of:
    a. malpractice
    b. slander
    c. invasion of privacy
    d. negligence

16. Performing a verbal act meaning to injure the reputation of another person is a definition of the term:
    a. negligence
    b. tort
    c. defamation of character
    d. invasion of privacy

17. The term which means verbal defamation of one's character is:
    a. slander
    b. libel
    c. legal
    d. liable

18. The term which means written defamation of one's character is:
    a. slander
    b. libel
    c. legal
    d. liable

19. The act of committing murder is an example of a:
    a. slander
    b. misdemeanor
    c. felony
    d. tort

20. Unauthorized disclosures (photographs or communications) concerning a patient's private life is:
    a. privileged communication
    b. invasion of privacy
    c. defamation of character
    d. maladjustment

POST TEST - concluded

21. A negligent act resulting in injury is known as a/an:

    a. tort
    b. liability
    c. ethic
    d. slander

Directions: In the statements below, circle the letter "a" for ethical or "b" for legal on your answer sheet to indicate what guideline or principle has been violated by a professional person.

22. Mary Brown constantly comes to work in a soiled uniform which smells strongly of cigarette smoke.

    a. ethical
    b. legal

23. You ask the medicine nurse to save any unused antibiotics of a certain kind for you to give your child.

    a. ethical
    b. legal

24. Because you failed to convince a wealthy gentleman not to give you a sizeable amount of money upon his discharge without causing a scene, you accept the money and give it to the supervisor who puts it in a fund for some special equipment.

    a. ethical
    b. legal

25. A discharged patient leaves a lovely dinner ring in the bedside table. You find that it just fits you and slip it into your pocket while cleaning the room.

    a. ethical
    b. legal

ANSWERS TO POST TEST

Modules C, D, and E

1. d
2. b
3. a
4. d
5. d
6. c
7. d
8. b
9. a
10. b
11. d
12. d
13. d
14. a
15. d
16. c
17. a
18. b
19. c
20. b
21. a
22. a
23. b
24. a
25. b

Unit 3 introduces the hospital and the patient environment. It provides the information for emergency and first aid skills necessary to maintain patient safety and comfort.

ECOLOGY AND EMERGENCY CARE

Module A - Maintaining the Patient's Environment
Module B - Health Care Facility
Module C - The Nursing Unit
Module D - Equipment and Supplies
Module E - Introduction to First Aid
Module F - Emergency Cardiopulmonary Resuscitation
and Heimlich Maneuver
Terminology
Post Tests: 1. Modules A, B, C, and D
2. Modules E and F
Answer Sheets

When you have completed the Learning Activities and are ready for a test, or wish to challenge a test, please see your instructor.

Suggested References

1. Being a Nursing Aide. 2d ed. Hospital Research and Educational Trust, Robert J. Brady Co., Bowie, Maryland, 1978.

2. American Heart Association. A Manual for Instructor of Basic Cardiac Life Support. September, 1977.

3. Trainex Corporation, Garden Grove, Calif. (audiovisual)

Safety in a Medical Facility
Hemorrhage and Shock

Suggested References (continued)

4. Rich, Bettie (R.N., M.S.). Introduction to the Patient and His Environment. Mt. San Jacinto College. (audiovisual)

5. American Red Cross Multi-Media Film Series, American National Red Cross National Headquarters, Washington, D.C. 20006. (audiovisual)

   Controlling Bleeding
   Artificial Respiration
   Poisoning
   Fractures
   Burns
   Heat Exhaustion

6. Pyramid Film Productions, Santa Monica, Calif. (audiovisual)

   Pulse of Life
   Breath of Life

ECOLOGY AND EMERGENCY CARE SKILLS

Module A - Maintaining the Patients' Environment

RATIONALE

As a health care worker you will be responsible for maintaining a safe, healthy, and comfortable environment for your patients. The information in this module will help you to perform your duties in a safe, neat, and cautious manner.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify the duties that two (2) of the four (4) Health Team members perform in order to maintain the proper environment.
2. Identify methods for providing a comfortable external environment for the patient.
3. Identify one of the four (4) persons having special needs which require an adjustment to their external environment.
4. Identify the meanings of two (2) of the ten (10) vocabulary words in the Terminology activity (Activity #1) of this module.

LEARNING ACTIVITIES

In this module you will use a cassette tape and a filmstrip to complete the exercises and to learn the material on the hospital environment. Directions are included to help you complete the exercises. If you have difficulty, ask your instructor for assistance.

ACTIVITY #1. Terminology

Directions: Consult the Terminology section at the end of this module. Learn the meanings and write the definitions of the following vocabulary words.

1. environment: ______________________________
2. external: ______________________________
3. internal: ______________________________
4. ecology: ______________________________
5. humidity: ______________________________

LEARNING ACTIVITIES - continued

6. ventilation: ______________________________
7. cells: ______________________________
8. circulation: ______________________________
9. evaporation: ______________________________
10. glare: ______________________________

ACTIVITY #2. The Patients and Their Environment

Directions: Obtain the necessary materials and complete the activity as directed.

Materials needed:

1. Audio tape and filmstrip entitled Introduction to the Patient and His Environment, by Bettie Rich, (RN, M.S.), Mt. San Jacinto College.
2. Cassette
3. Projector

Listen to the tape and view the filmstrip as you complete the following parts of this activity.

The Environment

Directions: Circle the letter to the correct response.

1. The interrelationship between people and their surroundings is called:
   - a. external environment
   - b. therapeutic environment
   - c. ecology
   - d. internal environment
2. Hospital workers are helping to make a therapeutic environment for patients when they:
   - a. get along well with their co-workers
   - b. relieve patient anxiety by explaining what they are going to do, before starting patient care
   - c. communicate their true feelings
   - d. tell patients their true and honest opinions about the physicians

LEARNING ACTIVITIES - continued

The Internal Environment

Directions: Fill in the blanks.

1. The internal environment is the ______________ and _____________ of fluids that ______________ body cells.

2. The measurement of fluid intake and output and the restriction of salt in the diet aid the physician in the management of patients and is called ________________ environment.

External Environment

Directions: Using the blank lines, indicate for each member of the hospital team two (2) duties that contribute to the hospital environment.

1. Engineer: ____
2. Housekeeper: ____
3. Nursing Assistant: ______________________________________
4. Maintenance: ____

The Temperature

Directions: Fill in the blanks.

1. A desirable temperature range in most hospital rooms is between _____°F and _____°F.

2. Three (3) cases in which it may be desirable to increase the room temperature to 80°F are:

   a. ____

   b. ____

   c. ____

3. When the environment is hot and the patient perspires freely, one nursing action to replace fluids lost in perspiration is to: ______________________

4. List three (3) methods for adding warmth for a patient who is cold.

   a. ____

   b. ____

   c. ____

LEARNING ACTIVITIES - continued

5. Hot water bottles are not used because the patient may suffer from:

____

6. Some patients require special caution if external heat is applied, because they could be easily burned. List two (2) types of such patients.

a. ____

b. ____

The Humidity-Ventilation

Directions: Circle the "T" if the statement is more true than false. Circle the "F" if the statement is more false than true.

1. T F Humidity refers to movement of air.

2. T F A humidity of 30-50 percent is considered most comfortable.

3. T F The higher the air temperature, the more water it can hold.

4. T F Evaporation of perspiration is increased in high humidity.

5. T F The use of a vaporizer increases humidity.

6. T F Circulation of air is increased if the opened window and the opened door are on opposite sides of the room.

7. T F Cold air rises.

8. T F Drafts are undesirable in patient areas.

Lighting

Directions: Fill in the blanks.

1. A good light should be bright enough to avoid straining the eyes in order to see, but it should be diffused (scattered) or without any ________________.

2. A "night-light" is desirable in a hospital room to provide ____________ for the patient, and to enable nurses to make ______________________.

Odors

Directions: Fill in the blanks.

1. List two (2) ways the health care worker may be a source of unpleasant odors.

a. ____

b. ____

LEARNING ACTIVITIES - continued

2. These odors may be controlled by:

   a. ______________________________

   b. ______________________________

Privacy

Directions: Fill in the blanks.

1. List two (2) ways you will provide privacy for your patient.

   a. ______________________________

   b. ______________________________

Safety

Directions: Fill in the blanks.

1. Falls cause many accidents in and out of the hospital. List five (5) ways you can prevent falls.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

   e. ______________________________

2. Under certain conditions, some patients are more likely than others to have an accident. State in what way patients in the following conditions may suffer an accident.

   a. Sedated: ______________________________

   b. Confused: ______________________________

   c. Blind: ______________________________

   d. Children: ______________________________

   e. Emotionally disturbed: ______________________________

LEARNING ACTIVITIES - continued

Colors

Directions: Circle the correct answer.

1. The colors in a room (can/cannot) affect a person who is not color blind; therefore,
2. most patient rooms in hospitals have (subdued pastel colors/bright stimulating colors).

Noise

Directions: Fill in the blanks.

1. One negative environmental factor is ______________________.
2. Three (3) common sources of hospital noises are:
   a. ____
   b. ____
   c. ____
3. You can best reduce undesirable noise in the hospital by:
   a. ____
   b. ____

Order (neatness)

Directions: Fill in the blanks.

1. Removing soiled dishes and unused equipment, newspapers, etc. from the patient's unit will help you to maintain _______________ and _____________ in the patient's environment.

Odors

Directions: Fill in the blanks.

Illness may alter a patient's perception of smell.

1. List two (2) ways the patient may be a source of unpleasant odors.
   a. ____
   b. ____

LEARNING ACTIVITIES - concluded

2. You can control these odors by:

   a. ____________________

   b. ____________________

Remember to be alert and cautious. Providing a good environment for your patients will contribute to their safety, comfort, and recovery.

Safety will be discussed thoroughly in Module "B" in this unit.

NOTE: Check the answers you have given in this activity with the answers given on the following pages of this module. In case you do not have access to the filmstrip, use the answers as a study guide for this module.

ANSWERS

ACTIVITY #2

The Environment

1. a

2. b

Internal Environment

1. composition
   volume
   surrounds

2. internal

External Environment

1. temperature, humidity

2. cleanliness, order

3. safety, neatness, order, privacy

4. repairs, painting

Temperature

1. 68°

   72°F

2. a. newborn babies
   b. elderly
   c. during bathtime

3. offer extra liquids

4. a. added blankets
   b. shawl
   c. bedsocks

5. burns

6. a. aged or infants
   b. diabetic or paralyzed

ANSWERS - continued

Humidity-Ventilation

1. False
2. True
3. True
4. False
5. True
6. True
7. False
8. True

Lighting

1. glare
2. safety
   observations

Odors

1. a. dressings
   b. body discharges

2. a. wrapping and disposing of dressings properly
   b. cover and dispose of bedpans and urinals immediately

Privacy

1. a. closing doors
   b. closing curtains, screens and leaving the room

Safety

1. a. remove articles from the floor
   b. mop up spills immediately
   c. use bedside rails
   d. leave beds in low position
   e. restrain patients as indicated
   f. instruct patients to use handrails
   g. assist poorly sighted patients

2. (The answer to this question is the same for all conditions.) The patients may fall from the bed or burn themselves.

ANSWERS - concluded

Colors

1. can

2. subdued pastel colors

Noise

1. noise

2. a. people (their voices)
   b. equipment

3. a. avoiding loud talking, or, asking the patient to turn down the sound on the television or radio
   b. avoiding dropping equipment
   c. machinery

Order

1. neatness and order

Odors

1. a. bad breath
   b. body odors

2. a. avoid smoking, spicy foods (onion, garlic)

If you have difficulty in any areas, review that section. Proceed to Module B.

unit 3

ECOLOGY AND EMERGENCY CARE SKILLS

Module B - Health Care Facility

RATIONALE

One major job of every health care worker is to safeguard patients. You will learn to recognize safety factors so you will be able to maintain them.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify methods of fire prevention.
2. Identify frequent causes of health care facility accidents.
3. Identify methods to prevent health care facility accidents.
4. Identify the types of patients that are susceptible to health care facility accidents.

LEARNING ACTIVITIES

In this module you will be reading information on safety and answering questions about the material you read. Your instructor will assist you with the suggested clinical and classroom assignments. If you have any problems, check with your instructor.

ACTIVITY #1. Fires

Directions: Read the following.

> Modern health care facilities are fireproof buildings. This means that the design of the building, and the construction material used, resist flames and prevent the spread of fire. Unfortunately, fires do occur. Fire safety means preventing fires and knowing what to do if one does occur.

Major Causes of Fires

1. Carelessness while smoking and using matches
2. Misuse of electricity
3. Defects in heating system
4. Spontaneous ignitions of fires
5. Improper disposal of trash

LEARNING ACTIVITIES - continued

Causes of Fire in a Health Care Facility

1. Oxygen Equipment
2. Flammable or combustible liquids or fluids
3. Anesthetic gases
4. Flammable chemicals in laboratories

When you learn fire prevention, you will reduce the chances of fire.

Fire Prevention

1. Use ash trays while smoking.
2. Clean ash trays in a sand or water filled container.
3. Smoke only where smoking is permitted.
4. Observe confused (disoriented) patients closely while they are smoking.
5. Use aerosols away from fire.
6. Investigate burning odors - report your findings.

Fire Prevention in a Health Care Facility

1. Supervise the smoking of confused and sedated patients.
2. Make special observations during oxygen therapy.
    a. Observe No Smoking signs.
    b. Maintain cautious use of electrical equipment.
3. Inspect all electrical plugs and equipment.
4. Report any needed repairs immediately to the nurse in charge or the ward clerk.
5. Learn the fire procedure in your health care facility.

Directions: Complete the following exercise.

List four (4) major causes of fire, and give the methods you will use to prevent fires. Check your answers with the material you read in this activity.

1. ______________________ 3. ______________________

2. ______________________ 4. ______________________

LEARNING ACTIVITIES - continued

Directions: Read the following.

Steps You Must Follow in Case of Fire in the Health Care Facility

1. Pull the fire alarm in the nearest alarm box.
2. Notify the main switchboard of the exact location and nature of the fire as soon as possible.
3. If the fire is in a patient area, assist the patients to safety.
4. Follow the emergency fire procedures for your department.
5. AVOID PANIC!!! (Many lives could depend on your actions in an emergency.)

The procedure in the event of a fire will be somewhat different, depending on the facility. It is your responsibility to learn what the fire plan is, and what your role as a nursing assistant will be in case of fire.

SUGGESTED CLINICAL ASSIGNMENT: Look up the fire plan in a health care facility and hand in a written report to your instructor for credit. Include:

1. Five (5) duties of the nursing assistant during a fire.
2. How you will keep patients safe during a fire.
3. The signal used to alert the health care facility that there is a fire.

ACTIVITY #2. Disaster Plan

Directions: Read the following.

Every hospital has a disaster plan. Following is a partial list of possible disasters:

1. Earthquake
2. Tornado
3. Explosion involving many injured people
4. Major automobile accident
5. Major fire
6. Plane crash
7. Any accident or incident involving many injured people who require immediate medical attention

The disaster plan involves the entire hospital staff. All health care workers must be familiar with the plan for the facility in which they are working, and their part in the plan.

LEARNING ACTIVITIES - continued

ACTIVITY #3. Health Care Facility Safety

Directions: Read the information on the following pages and complete the exercises.

Accidents to patients and staff members can be reduced, if simple measures are followed.

RULES FOR SAFETY

1. Keep floors clean and dry.
2. When not in use, return equipment to the proper storage area.
3. Keep bed cranks and wheels of all beds turned inward.
4. Report defective equipment immediately to the ward clerk or to the nurse in charge.
5. Wipe up all spills.
6. Report accidents or fire hazards immediately to the nurse in charge.
7. Leave high-low beds in their lowest position.
8. Leave signal cords, telephones, and TV controls within easy reach of patients.
9. Observe all posted safety information.
10. Put bed side rails up when the patient release is not signed.

Remember to use common sense!

Exercise 1:

List seven (7) rules of safety you will use to avoid accidents to patients and staff:

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________
7. ______________________________

Check your answers with the rules given in the first part of this activity.

LEARNING ACTIVITIES - continued

Continue reading the information and completing the exercises as indicated on the following pages.

I. Patient Injuries

   A. Causes of patient injuries

      1. Receiving the wrong treatment

      2. Falls

         a. from the bed

         b. from the chair

         c. from the examination table

         d. during transportation

         e. from slipping or stumbling due to objects or spills on the floor

   B. Results of injuries

      1. Increased hospital stay for the patient

      2. Permanent disability for the patient

      3. Death of the patient

      4. Lawsuits to health care facility and personnel

II. Solutions to Patient Injuries

   A. Provide the right treatment to the right patient

      1. Check the wrist band. A wrist band or bracelet is worn by the patient for positive identification. Always identify the patient by checking the wrist band before initiating any treatment.

      2. Use good judgment. Know procedures before you perform them.

III. Injuries from Falls in the Health Care Facility

   A. Those who fall from beds in the health care facility between the hours of 0500 to 0800 are:

      1. Young patients (2 to 5 years of age)

      2. Patients over 50 years of age

      3. Patients under the effects of sedatives

LEARNING ACTIVITIES - continued

4. Patients who are confused

B. These people are usually up at this time to go to the bathroom for elimination.

IV. Solutions to Falls in the Health Care Facility

A. Prevent falls from beds

1. Have beds in low position, especially at night.

2. Raise side rails on beds for all young patients and for patients over 50 years of age, especially at night.

3. Make rounds frequently (every half-hour) after lights are out at night - between 2000 and 0800.

a. Offer bedpans and urinals.

b. Ask questions to determine the reason for the patient's wakefulness.

4. Anticipate the patients who may have polyuria or any special needs such as:

a. patients receiving IVs

b. patients who are on force fluids

c. patients receiving diuretics

d. diabetics

e. patients with cystitis

5. Anticipate that patients will awaken early in the a.m.

6. Answer call lights immediately, as patients may be helpless and needing to urinate, etc.

7. Be certain that the patients have signal lights available for quick use.

B. Prevent falls from chairs

1. Select a chair to meet the needs of each patient.

a. high-straight backs

b. armrests

c. foot and leg supports

LEARNING ACTIVITIES - continued

2. Apply the correct supports.
    a. vest restraints
        (1) avoid injury from restraints
        (2) use precautions when using restraints
            (a) avoid axillary pressure
            (b) avoid interfering with respiration
            (c) maintain adequate circulation to all body parts
    b. leg supports and restraints
    c. safety belts
3. Check patient's position in chair frequently. Assist the patient to keep good body alignment.

C. Prevent falls during ambulation

1. Provide adequate instruction to patient.
    a. purpose of ambulation
    b. limits of ambulation
    c. necessity of supervision
2. Observe sedated patients carefully, and assist them in getting up and moving about.
3. Maintain a safe walking path by removing.
    a. spills
    b. paper
    c. equipment

D. Prevent falls and injury during transportation

1. Apply safety belts.
2. Instruct patient to keep arms and hands at side.
3. Manipulate stretcher from patient's head.

LEARNING ACTIVITIES - continued

4. Stay with the patient who is on a stretcher.
5. Use locks on wheelchairs.
6. Back down steep ramps with wheelchairs.

Exercise 2. Complete the following.

1. The two (2) causes of patient's injuries are usually:

   a. ______________________________

   b. ______________________________

2. Patients wear wrist-band labels with their name for what reason?

   ____

3. Patient injury may cause or result in what four conditions:

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

Check your answers with those given at the end of this activity.

Exercise 3. Complete the following, using the blank lines provided.

1. Four (4) types of patients who fall from beds are:

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

2. List six (6) ways you may prevent patients falling from their beds.

   a. ______________________________

   b. ______________________________

   c. ______________________________

LEARNING ACTIVITIES - concluded

d. ______________________________

e. ______________________________

f. ______________________________

3. To prevent patients falling from chairs, you will:

a. ______________________________

b. ______________________________

4. To prevent injury to patients in chairs, you should check:

a. ______________________________

b. ______________________________

5. Injury during ambulation may be prevented by:

a. ______________________________

b. ______________________________

c. ______________________________

Check your answers with those given on the following page.

ACTIVITY #4. Lab and Clinical Activities

Lab Activities

1. View the Trainex film, Safety in a Medical Facility.
2. State in writing your vocational goal and how you will maintain safety in the hospital for yourself, for your patients, and for your co-workers. Give your paper to your instructor for credit.

Clinical Activities

1. Identify two types of patients requiring safety precautions. Tell your instructor how the safety needs of these patients should be met.

ANSWERS

ACTIVITY #3

Exercise 2

1. a. falls
   b. receiving the wrong treatment

2. positive identification

3. a. increased hospital stay
   b. disability
   c. patient's death
   d. lawsuits

Exercise 3

1. a. over 50 years of age
   b. young children
   c. sedated
   d. confused

2. a. side rails up
   b. offer bedpans and urinals
   c. make rounds
   d. answer night lights
   e. check signals, etc.
   f. check patients with special elimination needs

3. a. select adequate chairs
   b. apply supports

4. a. patient alignment
   b. check patient's circulation

5. a. patient's instruction by the nursing staff
   b. observations by the nursing staff
   c. maintaining a safe walking path

unit 3

ECOLOGY AND EMERGENCY CARE SKILLS

Module C - The Nursing Unit

RATIONALE

You will be involved with several areas of a nursing care unit. This module will help you learn the different areas of a nursing unit.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the meaning of two (2) of the six (6) vocabulary words given in Activity #1.
2. Identify and state one purpose of each of four (4) of the ten (10) areas in a nursing unit.
3. Identify the duties of the nursing assistant in two (2) of the ten (10) areas in a nursing unit.

LEARNING ACTIVITIES

In this module you will learn the material by reading. Included are diagrams to help you. Study these diagrams carefully. If you need help, ask your instructor.

ACTIVITY #1. Terminology

Directions: Consult the Terminology section of this unit. Write the definitions and learn the meanings of the following terms.

1. Private room: ______________________________
2. Semi-private room: ______________________________
3. Ward: ______________________________
4. Patient unit: ______________________________
5. Electric bed: ______________________________
6. Nursing unit: ______________________________

ACTIVITY #2. The Patient's Unit

Directions: Read the following.

A patient may occupy a room alone; this is called a private room. A room may be shared with one other person; this is called a semi-private room. There may be several patients in one room; this is called a Ward.

LEARNING ACTIVITIES - continued

In a room, each patient will have a bed, bedside table, chair, and other articles. The space for this equipment is called the "patient's unit."

To provide privacy, a patient's unit may be screened by using a moveable screen or draw-curtain.

Look at Diagram #1 on page 3 of this module, and learn the names of the items which are usually included in the patient's unit.

ACTIVITY #3. The Nursing Unit

Directions: Read the following information.

To work efficiently, you must be familiar with the location and function of all areas of the nursing unit involved in the care of patients. When you begin your duties with nursing units, you will be expected to acquaint yourself with the location of these areas. The locations will vary with each hospital.

The areas of nursing unit may include:

1. Conference Room
2. Examination Room
3. Kitchen
4. Utility Room
5. Linen Room
6. Medication Area
7. Nurses' Station
8. Restroom
9. Blackboard
10. Nursing Staff Lounge

Locate these areas on the two diagrams on pages 4 and 5.

A TYPICAL PATIENT UNIT

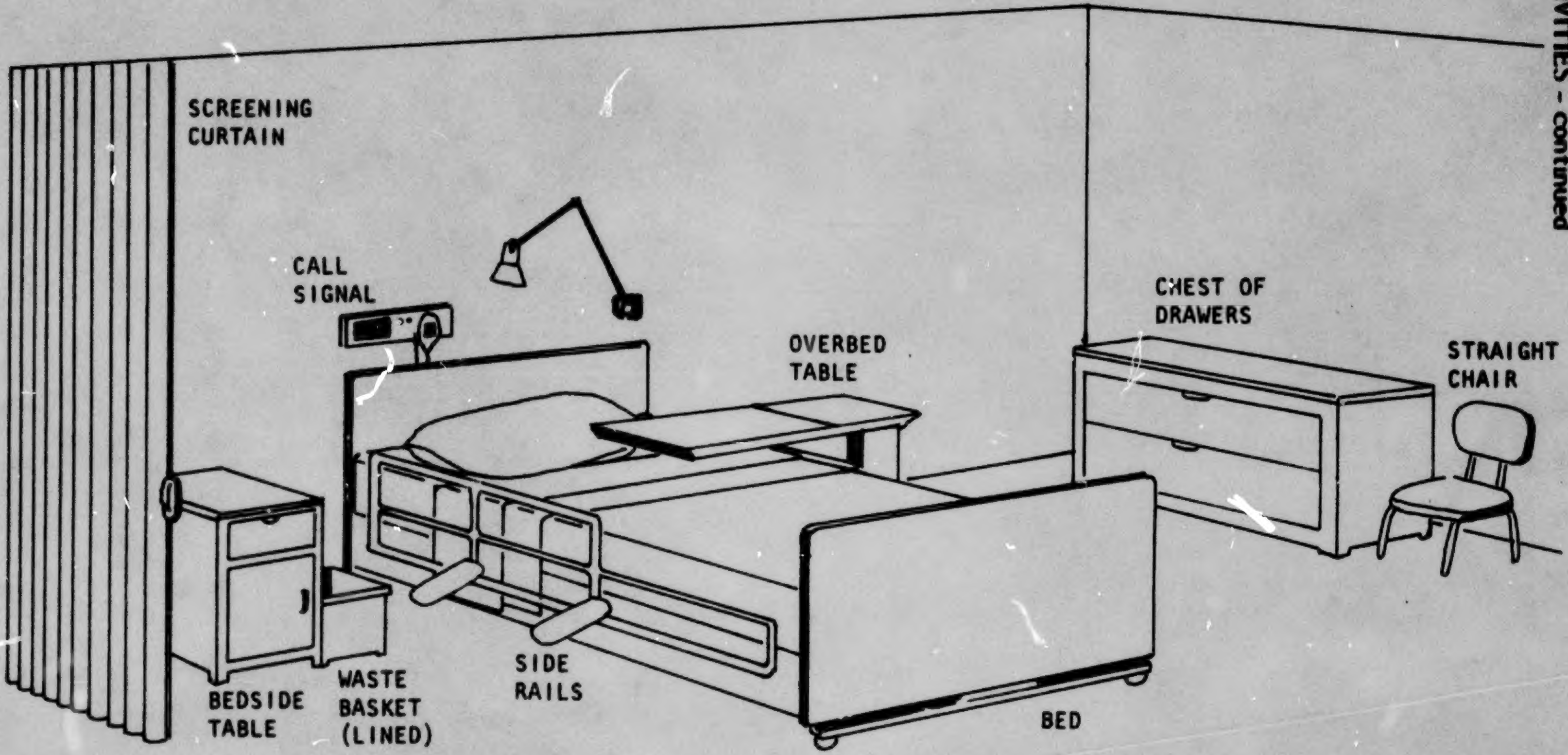
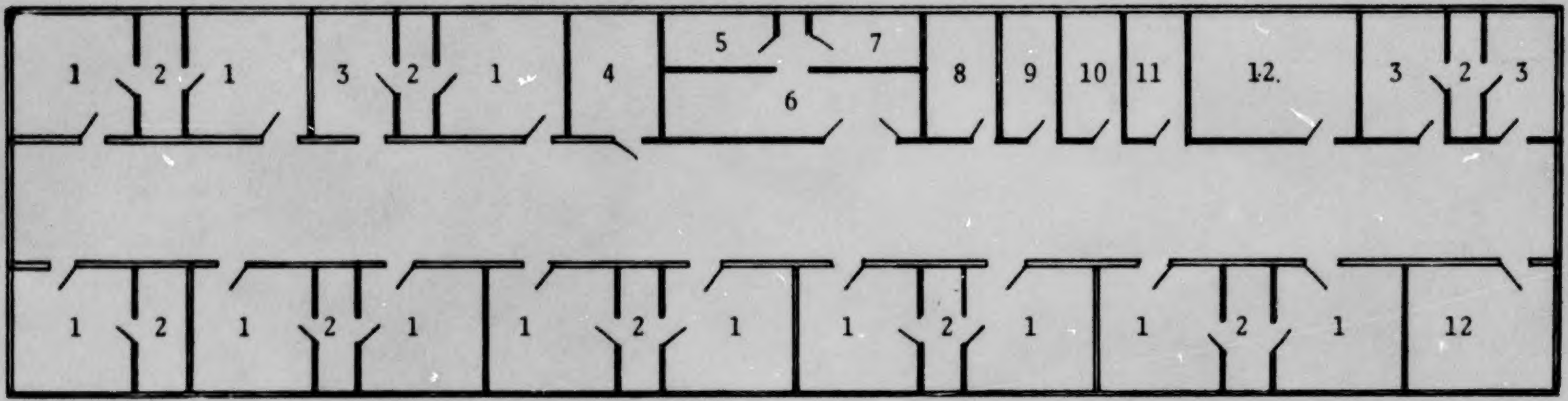

SCREENING CURTAIN
CALL SIGNAL
OVERBED TABLE
CHEST OF DRAWERS
STRAIGHT CHAIR
BEDSIDE TABLE
WASTE BASKET (LINED)
SIDE RAILS
BED

DIAGRAM 1

EXAMPLE OF ONE TYPE OF "NURSING UNIT"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2
1
1
2
1
12

1—Semi-private Rooms
2—Bathrooms
3—Private Rooms
4—Treatment Room
5—Medication Room
6—Nurses' Station

7—Conference Room
8—Linen Room
9—Dirty Linen Room
10—Clean Linen Room
11—Kitchen
12--Three-Bed Wards

DIAGRAM 2

EXAMPLE OF ALTERNATE TYPE OF "NURSING UNIT"

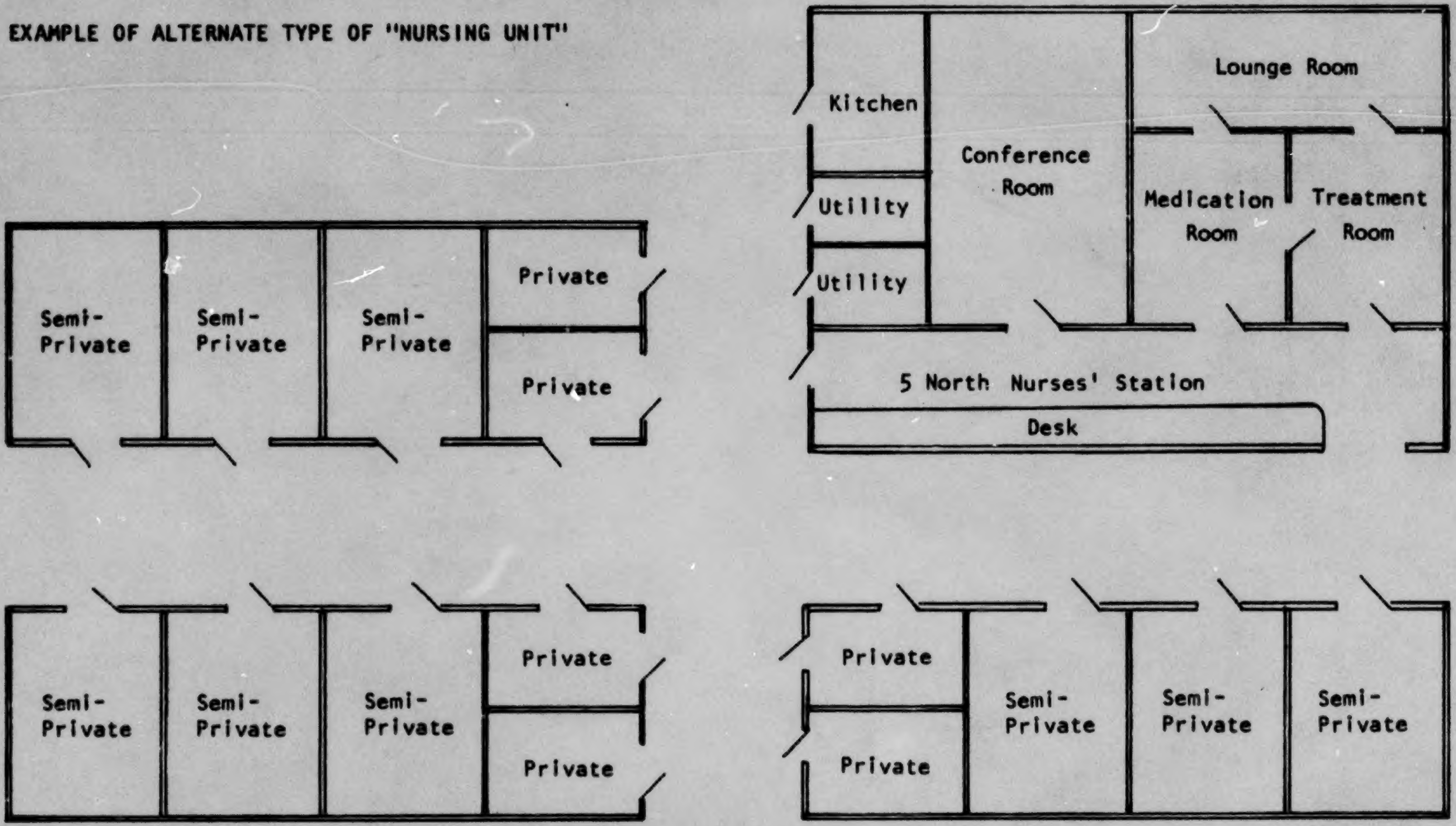

Kitchen
Utility
Utility
Conference Room
Lounge Room
Medication Room
Treatment Room
5 North Nurses' Station
Desk
Semi-Private
Semi-Private
Semi-Private
Private
Private
Semi-Private
Semi-Private
Semi-Private
Private
Private
Private
Private
Semi-Private
Semi-Private
Semi-Private

DIAGRAM 3

LEARNING ACTIVITIES - continued

Utility Room

The utility room is used to store patient supplies. The supplies in this room must be separated into clean and dirty areas. This may be accomplished by using two rooms. One room will be labeled "CLEAN SUPPLIES" and used to store only clean supplies; the other room will be labeled "DIRTY SUPPLIES" and used to store only dirty supplies. Separation of clean supplies from dirty ones may also be accomplished by labeling and using one side of the room for clean supplies, and the other side for dirty supplies.

The nursing assistants assigned to the unit are responsible for keeping these rooms clean and neat. The central supply assistants are responsible for stocking the clean supplies and removing the dirty ones.

A partial list of utility room supplies includes:

1. Bedpans, urinals
2. Bath basins, emesis basins
3. Thermometers
4. Gloves
5. Treatment trays
6. Dressings
7. IV poles
8. Special tubes
9. IV solutions
10. Specimen containers
11. Linen hampers

Before returning supplies to the dirty utility room, the nursing assistant must remove soil, blood, feces, tape, etc.

Diet Kitchen

The equipment and appliances located in the diet kitchen may include:

1. Refrigerator
2. Hot plates, ovens-microwave
3. Cupboards

LEARNING ACTIVITIES - continued

4. Sink
5. Toasters
6. Coffeepots, etc.
7. Utensils (forks, spoons, knives)

The diet kitchen is also used to store patient snacks and/or nourishments, such as:

1. Juices
2. Bread
3. Crackers
4. Soft Drinks
5. Coffee
6. Tea
7. Sugar
8. Salt-pepper
9. Sweetener
10. Milk
11. Broth

Diet assistants will stock the area with supplies as necessary.

Nursing assistants will keep the area clean and neat.

Housekeeping assistants will clean the floor and the large equipment and appliances.

Medication Area

The medication area is a special room, space, or cart, used by nurses as they carefully prepare and dispense medications.

This area is organized and kept neat by the medication nurse.

Supplies stored in the area include:

1. Syringes
2. Needles
3. Narcotic record books
4. Patient medications (pills, capsules, etc.)
5. Refrigerator for drugs
6. IV solutions

Your responsibility as a nursing assistant is to report the medication requests of the patient to the medication nurse.

LEARNING ACTIVITIES - continued

Nurses' Station

This area is located in the nursing unit. Here the nurses maintain all patient's records. You will find the Kardex, telephone, patient records, addressograph (a stamp used for patient charges), and laboratory slips.

The nurse's station is very busy in the morning. It is here that doctors will come to write orders for their patients. The ward clerks will transcribe the orders, and the nurses will write the observations in the patients' records.

You will make use of the Kardex to update, chart, and complete your assignment sheets.

Of great importance in this area, is the blackboard. This board is used to communicate special procedures for patients. It states the different times the patient is scheduled to leave the unit for surgery, X-rays, laboratory tests, etc. You will need to check this blackboard to update your patient assignment frequently. Some hospitals do not have a blackboard.

The Conference Room

This room may contain a conference table and a tape recorder. It is here that the nurses meet to:

1. discuss and solve patients' problems
2. listen to reports from the team members who are leaving the unit for the day

This room is kept neat by all members of the nursing staff.

Nurses' Staff Lounge

This area is set aside for the use of all nursing personnel. Here you may find:

1. chairs and sofa
2. bulletin board for notices of important meetings and other announcements
3. lockers for your personal belongings

Your duty here is to help keep this area neat.

Examination Room

This area will have a special table and instruments used for patient examinations.

LEARNING ACTIVITIES - concluded

The nursing staff will be responsible for:

1. keeping area neat
2. stocking supplies
3. assisting doctors during patient examinations

Linen Room

This room, or area, is used to store clean linen. Clean linen supplies are delivered to the unit from central supply. The nursing staff is responsible for keeping this room neat and in order.

Exercise

Directions: Complete the following.

1. The nursing staff will listen to reports about the patients from the team members who are going off duty in the ____________ room. This room is also used to ____________ and ________________ patients' problems.
2. The staff will refer to the ______________________ during the shift for updated patient information.
3. The medication nurse works in the ____________________ room.
4. The patient's snacks and coffee are stored in the _______________ area.
5. Clean linen will be found in the ___________ room. Dirty linen may be discarded in the dirty __________________ room where the linen chutes or hampers may be found.
6. The Kardex or patient care plans are usually located at the _________________.
7. The doctor may examine the patient in the _______________ room.
8. Clean bedpans, urinals, basins, etc., are stored in the clean ____________ room.

Check your answers with those given on the following page of this unit.

ANSWERS

ACTIVITY #3

1. conference room
   discuss-solve
2. blackboard
3. medication
4. kitchen
5. linen-utility
6. nurses' station
7. examination
8. utility

You should now know more about the patient unit and the nursing unit and be ready to proceed to Module D of this unit.

unit 3

ECOLOGY AND EMERGENCY CARE SKILLS

Module D - Equipment and Supplies

RATIONALE

Do you know the names of some of the equipment and supplies used in health care facilities?

In this module, you will learn the names of some of the equipment and supplies used in the patient care area of the health care facility and your responsibility for maintaining them.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify disposable and nondisposable equipment.
2. Identify special equipment ordered from the central supply room.
3. Identify the nursing personnel's responsibilities when using and cleaning equipment.

LEARNING ACTIVITIES

All of the information you will need to meet the objectives is included in this module. There is also a clinical assignment you will be expected to complete. If you need help, ask your instructor.

ACTIVITY #1. Patient Equipment and Supplies

Directions: Read the following.

Equipment and supplies in the health care facility must be available at all times for patient use. Some large equipment is stocked in each nursing unit. This equipment is used daily and includes:

1. IV poles
2. Wheelchairs
3. B/P cuffs
4. Stretchers

Special equipment may be kept available in special nursing units, or special-ordered from the Central Supply Room. Special equipment usually on hand in the nursing unit may include:

1. Crutches
2. Walkers

LEARNING ACTIVITIES - continued

3. Bed cradles
4. Traction equipment, etc.

Special equipment that is ordered from the Central Supply Room may include:

1. Flotation mattress
2. Sheepskin
3. Aqua K pad

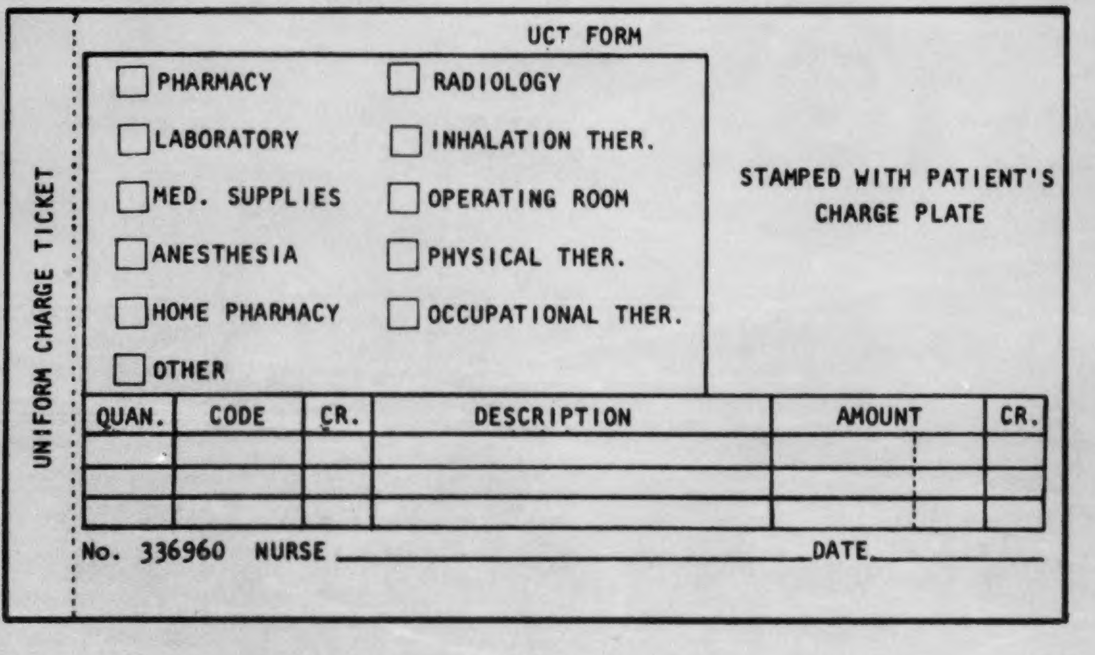
Nursing assistants must inspect all supplies and equipment to see if any repairs are necessary and also clean the equipment of soil before and after each patient use.

NOTE: If you discover that any equipment is in need of repairs, you must report the condition to the ward clerk or unit director. DO NOT USE EQUIPMENT THAT NEEDS TO BE REPAIRED!

ACTIVITY #2. Disposables versus Nondisposables

Directions: Read the following.

Most modern health care facilities use disposable items for patient care. Disposable items may be used once and thrown away, or used for one patient during the health care facility stay and then thrown away. These items are frequently charged to the patient's account by the nursing personnel on the unit. A uniform charge ticket, like the one below, may be attached to the item.



UNIFORM CHARGE TICKET

UCT FORM

☐ PHARMACY
☐ LABORATORY
☐ MED. SUPPLIES
☐ ANESTHESIA
☐ HOME PHARMACY
☐ OTHER
☐ RADIOLOGY
☐ INHALATION THER.
☐ OPERATING ROOM
☐ PHYSICAL THER.
☐ OCCUPATIONAL THER.

STAMPED WITH PATIENT'S CHARGE PLATE

QUAN.	CODE	CR.	DESCRIPTION	AMOUNT	CR.

No. 336960 NURSE ______________________________ DATE ____________

LEARNING ACTIVITIES - continued

Your duty when you obtain the disposable supplies is to:

a. complete the charge ticket

b. stamp it with the patient's charge plate

c. leave it at the nurses' station or designated area

A list of disposable supplies usually stocked on the nursing unit area:

1. Facial tissues
2. Enema kits
3. Dressings, dressing trays
4. Admission kits
5. Catheter trays
6. Gloves
7. Suture kits
8. Irrigation kits
9. Lotion
10. Powder

Nondisposable supplies are stocked on the nursing unit from the Central Supply Room on a daily basis, to maintain an adequate supply.

*Nondisposables may include:

1. Bedpans
2. Wash basins
3. Urinals
4. Emesis basins

*These items may also be disposable.

CLINICAL ASSIGNMENT: (To be completed in the clinical area)

A. List ten (10) disposable items stocked on the nursing unit.

1. ______________________ 3. ______________________

2. ______________________ 4. ______________________

LEARNING ACTIVITIES - concluded

5. ____________________
6. ____________________
7. ____________________
8. ____________________
9. ____________________
10. ____________________

B. Are the items charged individually to the patient? ____________

C. Return a demonstration to your instructor. This demonstration will include:

1. How to obtain disposable supplies
2. Completing a charge ticket
3. Stamping the ticket with the patient's charge plate
4. Leaving the ticket in the designated area

D. List four (4) nondisposable items stocked on the nursing unit:

1. ____
2. ____
3. ____
4. ____

Ask your clinical instructor to review your answers with you. Review any areas you do not understand. You are now ready to review the objectives in Modules A, B, C, and D and take the Post Test for Unit 3, Modules A, B, C, and D. Good Luck!

unit 3

ECOLOGY AND EMERGENCY CARE SKILLS

Module E - Introduction to First Aid

RATIONALE

How would you treat a fracture, shock, or burn? This module will tell you the correct action you should take first when an emergency occurs.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Define the term "First Aid."

2. Identify the proper first aid procedure to:

   a. control bleeding
   b. treat poisoning
   c. treat fractures
   d. treat burns
   e. treat heat exhaustion
   f. treat shock

3. Demonstrate application of direct pressure and applying pressure to two (2) of the seven (7) pressure points.

LEARNING ACTIVITIES

In this module you will view films or attend demonstrations to help you learn first aid procedures. If you have difficulty understanding the material presented, ask your instructor for help.

ACTIVITY #1. First Aid

Directions: Read the following.

> As you are leaving the grocery store, you see a small boy run into the side of a car. What should you do? What should you not do? The answers to these questions are in this module. The skills you use could save a life.
>
> The care you give an injured person or a person who becomes suddenly ill is called FIRST AID. First aid is defined as, "Giving immediate and temporary care to an injured person, or a person who becomes suddenly ill, before the doctor is contacted." Care given later, if medical help is not available, or is delayed, is also called first aid.

LEARNING ACTIVITIES - continued

First aid given in life-threatening situations is called "Urgent Care." Life threatening situations include:

a.	stopped breathing	d.	heavy bleeding
b.	heart attack	e.	poisoning
c.	stroke	f.	shock

When an accident occurs, carefully examine the injured and continue checking them until medical help arrives.

In an emergency, the following actions should be taken - in the order listed.

a. Control heavy Bleeding

b. Restore or maintain Breathing and Heartbeat

c. Treat for Poisoning

d. Prevent Shock or Treat for Shock

e. Get Medical Help

f. Continually examine the victim(s)

Directions: View the following Red Cross films and/or attend first aid demonstrations covering emergency situations. You may view these films individually or in a small group.

a. Control Bleeding

b. Artifical Respiration

c. Poisoning

d. Fractures

e. Burns

f. Heat Exhaustion

ACTIVITY #2. Bleeding

Directions: Read the following.

There are four steps (procedures) which may be taken to control bleeding; these steps are explained in parts a, b, c, and d of the following information. Whenever it is necessary to control bleeding, try the procedure explained in a - apply pressure. If this method fails to stop the flow of blood, use procedures b, c, d, as required. Go from one step to the next only if the procedure previously applied does not control the bleeding.

LEARNING ACTIVITIES - continued

a. Apply firm pressure directly to the wound with your hand. (You may use a dressing if convenient.)

   (1) Apply clean dressing. To avoid fresh bleeding, do not remove blood-soaked dressings; add dressings on top of the soaked dressings as needed.

   (2) Secure dressing in place.

b. Elevate extremity to slow down bleeding.

c. Apply pressure to the pressure point closest to the area of the bleeding. The accompanying diagram shows the location of the pressure points.

   *(1) Brachial artery

   *(2) Femoral artery

   (3) Temporal artery

   (4) Popliteal artery

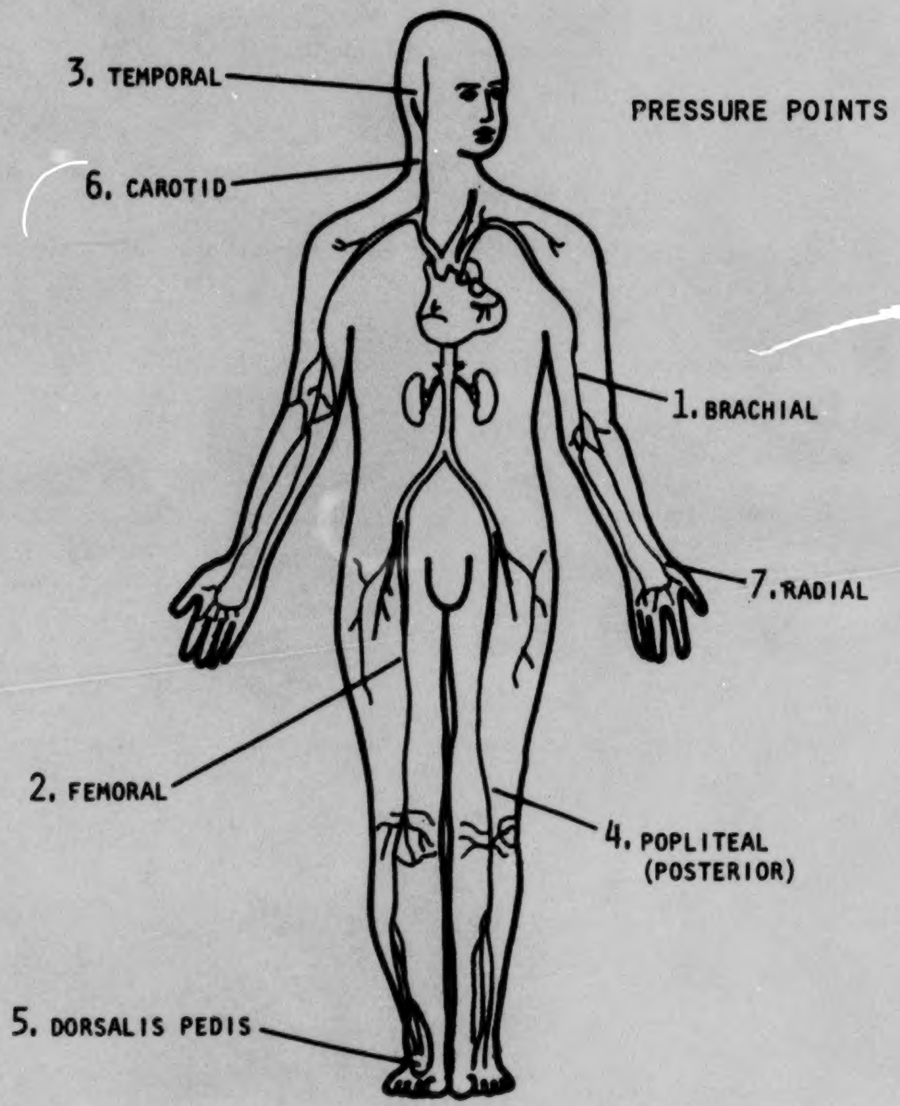
   (5) Dorsalis pedis artery

   (6) Carotid artery

   (7) Radial artery

***NOTE:** These two arteries are generally the best two to use when applying pressure.

LEARNING ACTIVITIES - continued


PRESSURE POINTS
3. TEMPORAL
6. CAROTID
1. BRACHIAL
7. RADIAL
2. FEMORAL
4. POPLITEAL (POSTERIOR)
5. DORSALIS PEDIS

LEARNING ACTIVITIES - continued

d. A tourniquet is used as a last measure or resort when direct pressure or pressure to the pressure points DOES NOT stop the bleeding and the patient's life is in DANGER!!

Steps for Application of Tourniquet (See diagram at the bottom of this page, showing procedure for application of a tourniquet.)

(1) Obtain a strip of 2" wide cloth.

(2) Tie strip as close to the wound as possible, but above the wound.

(3) Wrap cloth around the extremity - twice.

(4) Tie a half knot.

(5) Place a stick or similar object on the half knot.

(6) Tie cloth into a full knot.

(7) Twist the stick only enough to stop bleeding.

(8) Tie stick in place.

(9) Attach a label to the victim's chest, stating:

  (a) where tourniquet is applied

  (b) time that tourniquet was applied

(10) Do not cover tourniquet.

(11) Treat person for shock (You will learn this procedure in Activity #4 of this module.)

(12) Transport victim to the hospital.

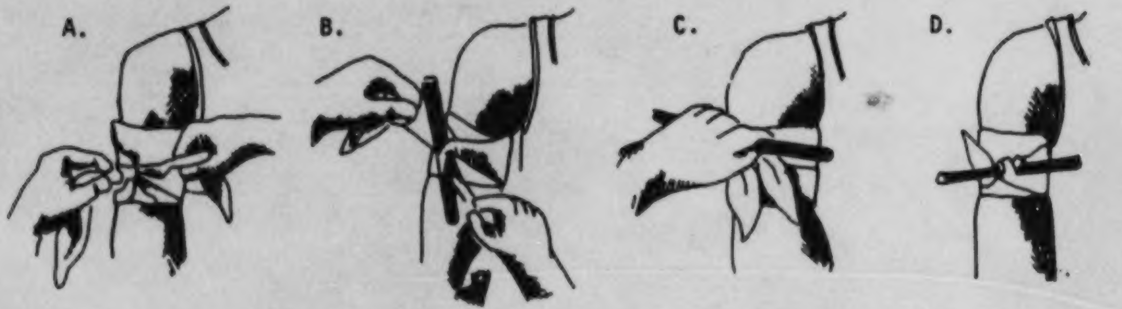
CAUTION!!!

DO NOT LOOSEN TOURNIQUET!!!

REMEMBER: Do not use tourniquet unless a person's life is in danger!!!

LEARNING ACTIVITIES - continued

APPLICATION OF A TOURNIQUET



Tie Half Knot

Place a stick on the half knot and tie

Twist

After bleeding has stopped, tie stick in place

Directions: Demonstrate the following to your instructor.

1. Applying direct pressure
2. Applying pressure to the
   a. Brachial Pressure Point
   b. Femoral Pressure Point

ACTIVITY #3. Wounds

Directions: Read the following.

A wound is defined as a break in the skin or the mucous membrane. Types of wounds are:

1. Abrasion - caused by rubbing or scraping of the skin
2. Incision - a sharp cut
3. Laceration - jagged or irregular tear
4. Puncture - caused by a sharp point going through the skin

The objectives of first aid care for wounds are:

1. Stop the bleeding
2. Protect wound from contamination
3. Give care for shock
4. Get medical help

LEARNING ACTIVITIES - continued

ACTIVITY #4. Shock

Directions: Read the following.

1. Shock is defined as insufficient flow of blood to and from the body cells, causing the body functions to be depressed.
2. Causes of shock include:
    - a. Heart damage
    - b. Loss of blood
    - c. Dilatation of blood vessels
3. Types of Shock
    - a. Hemorrhage shock - loss of blood
    - b. Respiratory shock - insufficient oxygen
    - c. Neurogenic shock - damage to nervous system control, causing blood vessels to dilate
    - d. Psychogenic shock - fainting caused when a person is overwhelmed by fear, and this fear causes a decreased blood supply to the brain
    - e. Cardiogenic shock - the pumping action of the heart is interrupted
    - f. Septic shock - bacteria infection is present and toxins invade the bloodstream
    - g. Anaphylactic shock - caused by exposure to allergenic substances to which a patient is sensitive. Some substances which may produce allergic reation in a patient are certain medications or foods, or insect stings.
    - h. Metabolic shock - occurs when biochemistry is out of balance; i.e., electrolyte balance is off.
4. Symptoms of Shock
    - a. Restlessness - anxiety due to decrease of oxygen
    - b. Weak, rapid pulse - due to body trying to keep blood pressure up
    - c. Cold, clammy skin - occurs when blood supply to skin is decreased
    - d. Diaphoresis - (profuse sweating) on forehead, face, neck and armpits
    - e. Cyanosis - bluish color on skin due to decrease of oxygen in blood

LEARNING ACTIVITIES - continued

- f. Dull eyes and dilated pupils - due to decreased oxygen supply to the brain
- g. Irregular breathing - due to decrease in oxygen
- h. Severe thirst
- i. Nausea and vomiting
- j. Blood pressure decreased - due to decreased blood supply or dilated blood vessels
- k. Fainting - due to decreased oxygen supply to the brain

5. Steps for Treating Shock
   - a. Keep patient lying down
   - b. Cover patient to retain body heat
   - c. Keep body flat if patient has:
     - (1) fractures
     - (2) head injuries
     - (3) spinal injuries
   - d. Elevate feet when there are:
     - (1) no fractures
     - (2) no head injuries
     - (3) no spinal injuries
     - (4) no complaints of severe pain
     - (5) no breathing difficulties
   - e. Secure and maintain airway
     - (1) give O_2
     - (2) give artificial respiration
   - f. Control bleeding
   - g. Splint fractures
   - h. Move patient cautiously and gently
   - i. Maintain records of treatments, symptoms, etc.

LEARNING ACTIVITIES - continued

j. Obtain medical help IMMEDIATELY!!

REMEMBER: Give First Aid Care for shock to all seriously ill persons!!

ACTIVITY #5. Hemorrhage

Directions: Read the following.

1. Hemorrhage is defined as bleeding from the arteries and the veins. Hemorrhage may be internal or external.
2. Control of External Hemorrhage
   a. Apply direct pressure
   b. Apply pressure to pressure points
   c. Apply tourniquet with caution, and only when the patient's life is in danger
3. Types of Internal Hemorrhage
   a. Hemothorax
   b. Ruptured spleen
   c. Gunshot wound
4. Symptoms of internal hemorrhage are the same as for shock. Review these symptoms! (Activity #4 of this module)
5. Treatment for hemorrhage is the same as for shock. REVIEW!! (Activity #4 of this module)

ACTIVITY #6. Review Exercise

Directions: Fill in the following.

1. When the capillaries or the circulatory system can no longer function to deliver oxygen to cells and to remove materials, what occurs?

   ____

2. State three (3) causes of shock.

   1. ____________ 2. ____________ 3. ____________

3. Massive blood loss will cause ________________ shock.

4. If a person is allergic to penicillin and receives an injection of penicillin, ______________ shock may result.

LEARNING ACTIVITIES - continued

5. List eight (8) signs (symptoms) of shock.

   1. ____________________ 5. ____________________
   2. ____________________ 6. ____________________
   3. ____________________ 7. ____________________
   4. ____________________ 8. ____________________

6. List four (4) first aid treatments for shock.

   1. ____________________ 3. ____________________
   2. ____________________ 4. ____________________

7. You must control hemorrhage or blood pressure will ______________.

8. List three (3) methods to control hemorrhaging.

   1. __________ 2. __________ 3. __________

9. State when you will use a tourniquet. ____________________

   ____

10. Give four (4) signs of internal bleeding.

    1. ____________________ 3. ____________________
    2. ____________________ 4. ____________________

Check your answers with those given at the end of this module.

ACTIVITY #7. Poisons

Directions: Read the following.

1. What to do if someone is poisoned:

   a. Call a physician or Poison Control Center IMMEDIATELY!!! Keep the telephone number by your phone, or in your wallet.

   b. Keep the victim warm.

   c. If you are unable to get the recommended treatment from a Poison Control Center, and while waiting for a physician, or before transporting the victim to the hospital, give appropriate treatment as shown on the chart on the following page.

   d. If the victim is having seizures or is unconscious, do not induce vomiting or give fluids.

LEARNING ACTIVITIES - continued

2. The treatment for poisoning will differ according to the kind of poison ingested. Read and remember the following chart:

TREATMENT FOR POISONING		
If Poison Is: **Strong Alkali** **Strong Acid** **Petroleum Product**	***If Poison Is Not:*** **Strong Alkali** **Strong Acid** **Petroleum Product**	***If Poison Is Unknown:***
A. Dilute Poison with one glass water or milk	**A. Dilute Poison**	**A. Dilute Poison**
B. Neutralize Poison **If strong Acid, give alkali solution such as M.O.M.** **If strong Alkali, give acid solution such as vinegar, lemon, etc.** *Note*—**No neutralizer for Petroleum**	**B. Induce vomiting with finger in throat or one tbsp. Syrup of Ipecac or 1 tsp. mustard in ½ glass water.**	**B. Get medical help**
C. Give a demulcent i.e., egg white, vegetable oil	**C. Get medical help**	
D. Get medical help		

3. Points to Remember

   a. When poison has been swallowed, you must dilute the swallowed poison by giving the victim (if awake) one glass of milk or water.

   b. Call the doctor IMMEDIATELY!!

   c. Be sure to save the label, the container, and the remaining poison for positive identification by the doctor.

   d. Keep all poisons and medications out of the reach of children.

4. In addition to swallowed poisons, there are skin poisonings, poisons in the eyes, and inhaled poisons. Treatment for each is as follows:

a. Poisons on the skin	Remove any affected clothing. Flood involved parts with water, wash with soap and water, and rinse; then call the poison center or doctor.

LEARNING ACTIVITIES - continued

b. Poisons in the eye	Flood the eye with lukewarm (never hot) water, poured from a pitcher, held 3 to 4 inches from the eye, for 15 minutes; then call the poison center or MD.
c. Inhaled poisons	Immediately, carry or drag the person to fresh air and give mouth-to-mouth resuscitation if necessary. Ventilate the area; then call the poison center or MD.

ACTIVITY #8. Heat Exhaustion and Heat Stroke

Directions: Read the following.

A. Heat exhaustion is a reaction to heat exposure causing a severe loss of body fluids.

1. Symptoms of heat exhaustion are:
   - a. pale, moist skin
   - b. profuse perspiration
   - c. normal temperature
   - d. victim may complain of dizziness and nausea, headache
2. Treatment for heat exhaustion:
   - a. remove from sun
   - b. give normal saline (salt water)
   - c. bed rest
   - d. contact the doctor in severe cases

B. Heat stroke is a reaction to heat exposure (usually the sun) causing the body temperature to be elevated far above the normal.

1. Symptoms of heat stroke are:
   - a. skin hot, dry and flushed
   - b. victim may complain of dizziness and nausea
   - c. temperature severely elevated, possibly as high as 105°
   - d. rapid pulse
   - e. may be unconscious

LEARNING ACTIVITIES - continued

2. Treatment for heat stroke:
    - a. move out of sun, away from heat
    - b. sponge in cool water, or alcohol and water
    - c. give cool water to drink, if conscious
    - d. DO NOT give coffee, tea, or alcoholic beverages
    - e. bed rest
    - f. get medical help

ACTIVITY #9. Burns

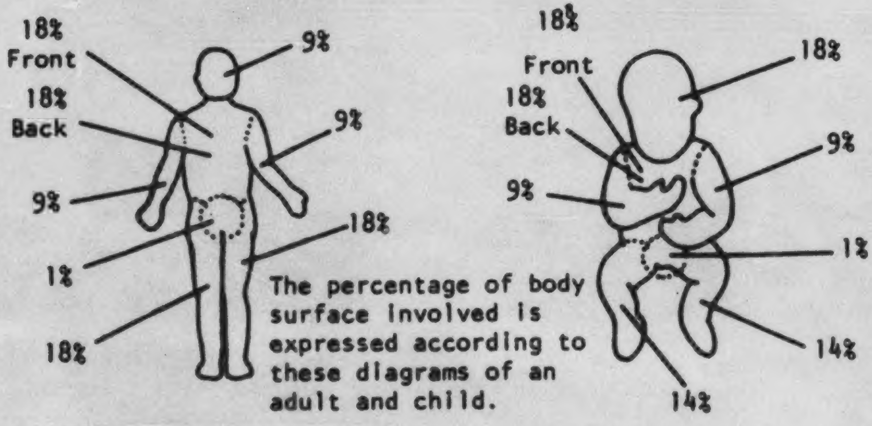
Directions: Read the following.

A. A burn is defined as the destruction of body tissue caused by heat.

1. Types of heat which cause burns:
    - a. thermal
    - b. sunburn
    - c. chemical

B. The severity of a burn is determined by 3 factors:

1. Depth of the burn; this is called "degree." First-degree burns are mild; second-degree burns are deeper; and third-degree burns are the deepest.
2. Size or extent of the burn. A very large burn is one that covers, for example, one side of the upper or lower half of an arm or leg, or the upper or lower back. (See diagram below.)



The percentage of body surface involved is expressed according to these diagrams of an adult and child.

LEARNING ACTIVITIES - continued

3. Location of the burn. Burns on critical areas of the body are especially dangerous. The four critical areas are:

    a. hands

    b. feet

    c. face

    d. genital organs

The severity of a burn depends upon how deep the burn is, how much of the body it covers, and on which part of the body it is located.

In addition to depth, size and location, the age and physical condition of the victim can contribute to the seriousness of burns. Victims who are very young, elderly, or ill, are at greater risk from burns.

There is danger of infection in any burn, especially if there are blisters or loss of skin. Any burn that seems to be infected must receive medical attention as soon as possible.

Burns on the face, nose, or mouth, may indicate burns in the breathing passages. Such burns can cause the airway to swell up and keep the person from breathing. Continue to check breathing, give mouth-to-mouth breathing if necessary, and get immediate medical help.

C. Treatment for burns

1. First-degree burns

    a. cool the burn by running cold water over the burn area

    b. apply an antiseptic cream or mineral oil

2. Second-degree burns

    a. cool the burn by running cold water over the burn area

    b. apply a clean dressing

    c. consult doctor if a large area is burned

3. Third-degree burns

    a. treat for shock

    b. keep patient lying down

    c. remove clothing from burn area (unless stuck to burn)

LEARNING ACTIVITIES - continued

d. apply clean, dry dressing

e. consult doctor

ACTIVITY #10. Fractures

Directions: Read the following.

A. Fracture is defined as a broken bone.

1. Symptom of a fracture is deformity of the extremity

2. Types of fractures are:

    a. simple - a bone snaps, no wound

    b. compound - bone penetrates skin, and a wound is present

3. Treatment for a fracture:

    a. treat for shock

    b. apply clean dressing over the wound

    c. apply splint to keep the injured area immobile

    d. contact doctor IMMEDIATELY!

ACTIVITY #11. First Aid Pointers

Directions: Read the following.

1. Give first aid to minor as well as major injuries.

2. DO NOT attempt to arouse unconscious persons by shaking, talking or shouting to them.

3. DO NOT give fluids to unconscious or partly (semi) conscious persons.

4. Refrain from making statements to the victims and/or bystanders about the injuries. It is not the first aider's duty to diagnose, evaluate, or predict.

5. Reassure the victims by describing the first aid you are going to give, and explaining in what way it will be helpful.

6. If the victims are unconscious, loosen clothing around the neck.

7. If no fractures are present, turn injured persons on their side, to aid respiration.

LEARNING ACTIVITIES - concluded

ACTIVITY #12. Review Exercise (Questions on First Aid)

Directions: Fill in the blanks. (Answers to all of the following are contained in this module.)

1. Define First Aid. ______________________________

____

2. List one first aid measure for treatment of a burn. ______________

____

3. List two first aid measures for treatment of hemorrhage.

    a. ____

    b. ____

4. List two first aid measures for treatment of a fracture.

    a. ____

    b. ____

5. List three first aid measures for treatment of shock.

    a. ____

    b. ____

    c. ____

6. List one first aid measure for treatment of any kind of poisoning. Tell which kind of poisoning you are treating. ______________

____

7. List two first aid measures for treatment of heat exhaustion.

    a. ____

    b. ____

ANSWERS

ACTIVITY #6

1. shock

2. heart damage
   loss of blood
   dilatation of blood vessels

3. hemorrhage

4. anaphylactic

5. restlessness
   nausea
   vomiting
   cold, clammy skin
   blood pressure decreased
   weak, rapid pulse
   fainting
   diaphoresis
   cyanosis
   dull eyes and pupils dilated
   irregular breathing
   thirst

6. see page 8 of this module

7. drop

8. pressure point
   direct pressure
   tourniquet

9. when patient's life is in danger

10. see Symptoms of Shock on pages 7 and 8 of this module.

unit 3

ECOLOGY AND EMERGENCY CARE SKILLS

Module F - Emergency Cardiopulmonary Resuscitation and Heimlich Maneuver

RATIONALE

A primary cause of death is lack of air. The sudden cessation (stopping) of heart and respiratory action creates an "emergency situation" in which you may become involved whether you are at work, at school, during free time, or at home. When you know the signs of cardiac standstill, signs of choking and respiratory collapse, you can give immediate attention to the problem.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the procedure for mouth-to-mouth resuscitation.
2. Identify the signs and symptoms of cardiac standstill (cardiac arrest).
3. Identify the procedure for cardiac compressions (adult and child).
4. Demonstrate the steps for emergency cardiopulmonary resuscitation on adult and infant manikins.
5. Identify the procedure for clearing an obstructed airway.
6. Demonstrate the steps for emergency care of an obstructed airway.

LEARNING ACTIVITIES

In this module you will read the materials given; view the Trainex film, Cardiopulmonary Resuscitation Initial Phase (CPR); observe and return a demonstration of cardiopulmonary resuscitation on the manikin; and observe and return a demonstration of first aid for an obstructed airway.

ACTIVITY #1. Respiratory Arrest

Directions: Read the following and complete the demonstration for your instructor.

Respiratory arrest is the sudden cessation of breathing. If breathing stops, death may occur in from 4 to 6 minutes. It is possible to be in respiratory arrest without cardiac arrest, but cardiac arrest will probably follow within 2 to 4 minutes. Reestablishing the victim's breathing is your priority. The fastest and best way to get air into the person suffering the attack is to blow air into the mouth and lungs; this may sustain life until medical help arrives.

LEARNING ACTIVITIES - continued

Since the respiratory center in the brain must function in order to produce respiration, any condition that depresses or destroys the respiratory center will cause respiration to cease. A person can stop breathing from abuse of drugs and alcohol; drowning; gas poisoning; electric shock; choking; heart failure; smothering; stroke; and other causes.

Signs and symptoms of respiratory arrest are:

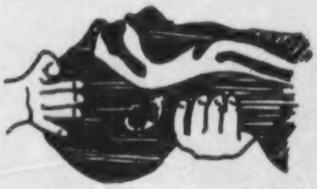
1. No chest rise or fall
2. No breath sound

— No Respiration

Establishing Unresponsiveness

Be careful when approaching an unconscious person. The victim may be in contact with electrical current. If that is the case, turn off the electricity before you touch the person. There are hundreds of other possible causes of unconsciousness, but the first thing you must do is to check for breathing.

1. Try to awaken the person; shake the victim's shoulder gently, and ask, "Are you all right?" (Violent shaking may compound injuries, particularly if neck injuries are present.)
2. If there is no response, check for signs of breathing (chest rise and fall; breath sound).
    a. Be sure the victim is lying flat, face up. If you have to roll the victim over, move the entire body at one time.
    b. Loosen tight clothing around the neck and chest.
3. Open the airway. (Rescuer should place self at victim's side.)
    a. Lift victim's neck up gently, with one hand.
    b. Push down and back on the forehead with the other hand, thus establishing hyperextension of the neck. (See illustration.)



NOTE: The tongue is the most common cause of airway obstruction. The tongue is attached to the lower jaw, therefore, moving the jaw forward lifts the tongue away from the back of the throat and opens the airway. This may be all that you will need to do to restore the victim's breathing.

LEARNING ACTIVITIES - continued

c. LISTEN - for air breath sounds - by placing your ear close to the victim's mouth;

LOOK - for the chest to rise and fall;

FEEL - for the flow of air on your cheek.

KNOW YOUR SENSES:

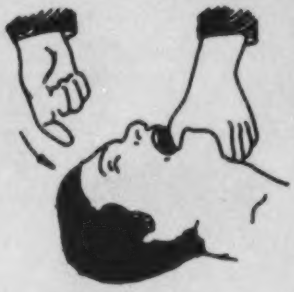
1. Sight
2. Touch
3. Hearing

Rescue Breathing

1. Clear the airway

   a. Hold the victim's mouth open with one hand, using your thumb to depress the tongue. If unable to open the mouth, use the "tongue jaw lift" - put your thumb on the victim's top teeth, and your index finger on the bottom teeth in a cross fashion, and open the mouth by pushing with your index finger.

   b. Make a hook with the pointer finger of your other hand, and, in a gentle sweeping motion, reach into the victim's throat and feel for a swallowed object which may be blocking the air passage.



Hold victim's mouth open; depress tongue with your thumb

2. Give mouth-to-mouth resuscitation

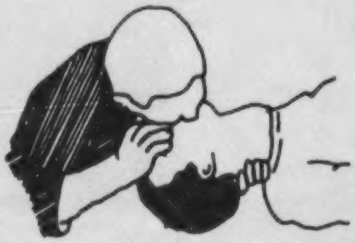
   a. Put your hand on the victim's forehead, pinching the nose shut with your fingers, while holding the forehead back.

   b. Keep your other hand under the victim's neck, supporting and lifting up slightly, to maintain an open airway.

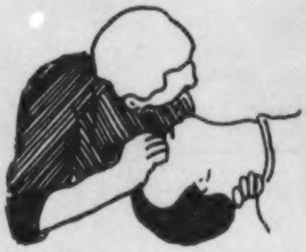
   c. Take a deep breath; open your mouth wide and place it over the victim's mouth. Blow air into the victim until you see the chest rise - give 4 quick breaths.

   d. Remove your mouth from the victim's. Turn your head to the side and watch the chest for a falling movement while you listen for air escaping from the mouth as the victim exhales.

   e. If you hear air escaping, and see the chest fall, you know that the rescue breathing is working. Continue the resuscitation effort until help arrives.



Blow air into the victim



Watch for movement

LEARNING ACTIVITIES - continued

f. Repeat the cycle every 5 seconds - 12 breaths per minute.

3. Mouth-to-mouth resuscitation for a small child

   a. Be careful when tilting a small child's head back to clear airway. It cannot be tilted as far back as an adult's.

   b. Cover the child's mouth and nose with your mouth.

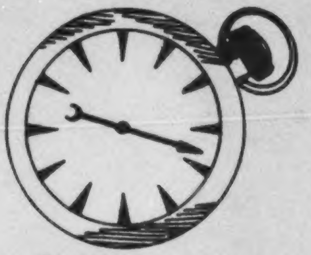
   c. Blow air in with less pressure than for an adult. Give small puffs. A child needs less air.

   d. Feel the chest inflate as you blow.

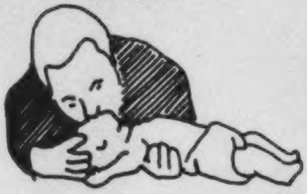
   e. Listen for exhales.

   f. Repeat once every 3 seconds - 20 breaths per minute.

ARTIFICIAL VENTILATION



Repeat
every 5 SECONDS—
12 breaths per
minute



Cover child's
mouth and nose
with your mouth

NOTE: Continue rescue breathing until help arrives. Remember, you are doing the breathing for the victim. If you stop, the victim could die within 5 minutes!!!

Establishing Absence of Pulse

During a rescue operation, kneel at the victim's side. Place one hand on the injured person's forehead to maintain head position, and use your other hand to feel the carotid pulse on the side of the victim's neck nearest to you.

Place your fingertips gently on the windpipe; then slide your fingers to the side nearest you and gently press the soft part of the neck next to the windpipe. If there is a pulse, it can be felt in this way.

If a pulse is present, continue to perform rescue breathing, inflating the lungs once every five seconds until help arrives. You should recheck presence of the pulse after each 12 ventilations - 1 every minute. There should never be any interference with the pulsation the victim may already have.

If you cannot feel a pulse, you will have to circulate the blood, as well as breathe for the victim. This is done by applying external heart compression. The procedure for applying external heart compression will be discussed in Activity #2 of this module.

IF YOU CANNOT DETECT A HEARTBEAT BY TAKING A PULSE

a) either at the wrist

b) or at the Carotid Artery (preferable)

LEARNING ACTIVITIES - continued

Because an infant's neck is short, it is difficult to feel a carotid pulse. It is also difficult to feel an infant's wrist pulse. However, by placing your index finger and middle finger flat over the baby's left nipple, you should be able to feel the apical pulse.

IMPORTANT STEPS	KEY POINTS
1. Note the time	Search for signs of breathing. Feel for a carotid pulse.
2. Remain with the patient	Remove pillow from bed. Place patient flat on back (in a dorsal recumbent position - no pillow).
3. Summon help	Get help by pulling the emergency call button in the patient's room; calling the nursing station through the intercom; shouting loudly; or using the patient's phone. . . Help will arrive soon, with the emergency cart and supplies.

Every hospital has a special cardiac arrest code which is used on the loud speaker. EXAMPLE: Code RED, Room 24.

If you observe danger signals (no respiration and no pulse), you must immediately initiate the cardiac arrest call.

NOTE: As a student, you will call for help, and only start mouth-to-mouth resuscitation as discussed in Activity #1, on pages three and four of this module.

Review Activity

Directions: As a review activity, complete the following exercise by writing the correct answer in the spaces provided.

1. The brain cells can live without oxygen for ____________ minutes.

2. List two (2) signs of respiratory arrest.

   a. ____

   b. ____

3. What is the most common cause of airway obstruction?

   ____

4. When trying to awaken the victim from an unresponsive state, the person should be shaken violently.

   Circle the correct answer: True False

LEARNING ACTIVITIES - continued

5. To open the airway, in what position should the victim be placed?

    ____

6. What three senses are used to establish if the victim is breathing?

    a. ____

    b. ____

    c. ____

7. How often is the adult victim ventilated when doing mouth-to-mouth resuscitation?

    ____

8. How often is the child victim ventilated when doing mouth-to-mouth resuscitation?

    ____

9. In establishing absence of pulse, the rescuer can check the pulse at either the ______________ or ________________.

10. In establishing absence of pulse in a child, one can feel an ________________ pulse over the baby's ______________ nipple.
    (right or left)

NOTE: Answers to all of the questions in this exercise can be found in the material given in Activity #1 of this module.

ACTIVITY #2. Cardiac Arrest

Directions: Read the following.

Cardiac arrest, or cardiac standstill, results when the heart and lungs suddenly cease functioning. Unless breathing and heart action is reestablished almost immediately, vital brain cells will die because of lack of oxygen which is essential for the cells to live. Brain tissue does not regenerate. If any cells die, that particular portion of the brain will cease to function. If only a few cells are destroyed, the damage will be minimal. If a larger area is destroyed, the patient may be left with very limited capabilities. Also, the location of the injury in the brain determines the type of the resulting handicap. Thus, the speed with which you, as a health care worker, act is vitally important to the patient's survival and chances for continuing a productive life.

If the circulation of oxygenated blood is started within four (4) minutes, there will be very little brain damage. A period of more than six (6) minutes without oxygen flowing to the brain cells will cause damage that cannot be repaired.

LEARNING ACTIVITIES - continued

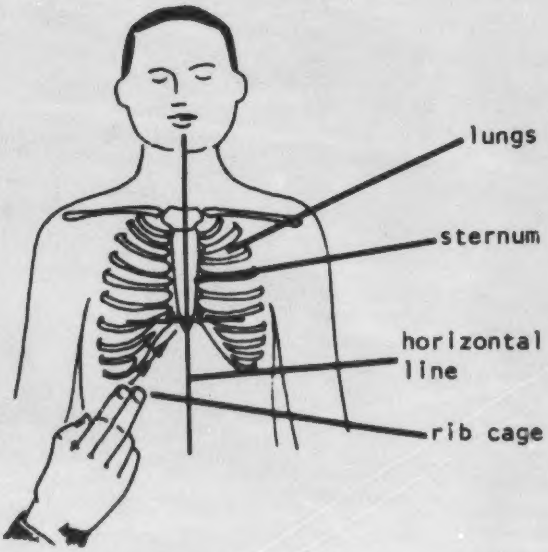
Signs and symptoms of cardiac arrest are:

1. No respiration
2. No pulse
3. Dilated pupils (optional check)

Cardiac Compressions

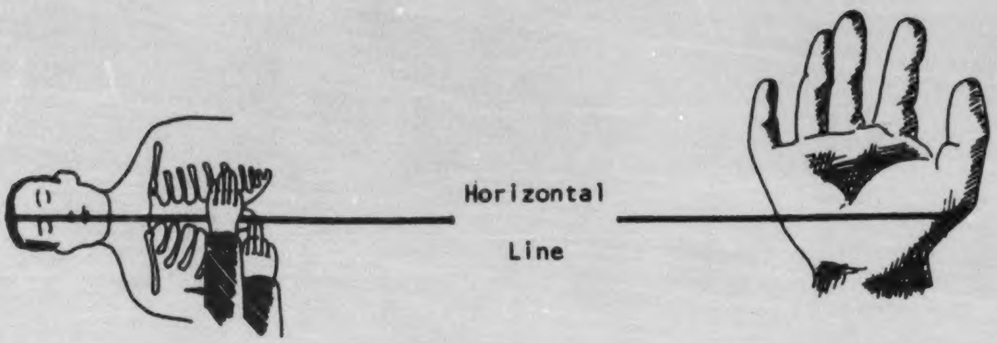
If the patient is pulseless, you will have to circulate the blood by applying external heart compression as follows:

1. Position the victim in a horizontal supine position (lying flat on back).
    a. Place the victim on a firm surface or board, to provide solid support during cardiac compressions.
    b. As the rescuer giving cardiac compressions, position yourself at the patient's side, chest level.
2. Locate the Pressure Points
    a. On the side next to you, locate the lower margin of the victim's rib cage with your left middle and index finger.
    b. Run your finger up along the rib cage to the notch where the ribs meet the sternum, in the center of the chest.
    c. Place your index finger on the notch, with your middle finger next to it. (See illustration.)



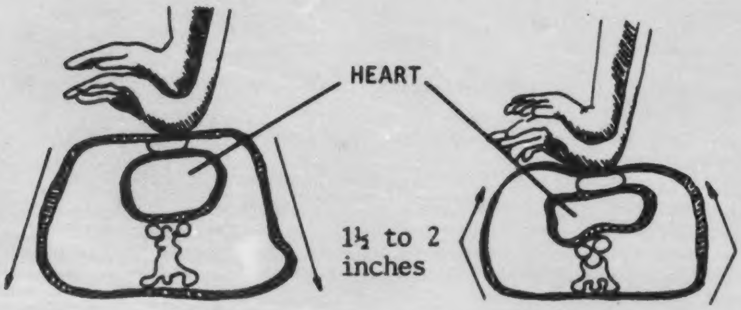
3. Apply your hands to pressure points
    a. Place the heel of your right hand next to your middle finger. Remove your left hand and place it on top of your right hand. Proper positioning of hands will prevent internal injuries and broken ribs. (Reverse hand position if you are left-handed.)
    b. Your fingers may be either extended or interlocked, but must be kept OFF the chest.

LEARNING ACTIVITIES - continued



4. Apply pressure

   a. The thrust for external heart compressions is straight down.



   b. Straighten your elbows by locking them, and position your shoulders directly over your hands. If the thrust is other than straight down, part of the effort is lost, and the compression is less effective.

   c. When your body is directly over the patient's sternum, the weight of your back creates the necessary pressure to compress the sternum.

   d. You must push with enough force to depress the sternum 1-1/2 to 2 inches. This will compress the heart between the breast bone and the spine so that blood will be forced out of the heart for circulation to the vital organs of the body.

   Repeat at least once a second; i.e., 60 times per minute. It is sometimes better to apply compression at a faster rate - 80 times a minute. Rates slower than 60 times a minute are not beneficial.

5. Continue the procedure until the victim revives or the physician pronounces the patient dead.

LEARNING ACTIVITIES - continued

6. Record the following:
    a. condition of victim when found
    b. time procedure was initiated
    c. how long procedure was continued
    d. end result (death, restoration of breathing)
7. Infant or child cardiac compressions
    a. The chest of an infant should be compressed 1/2 to 3/4 inches. The chest of a small child should be compressed 3/4 to 1-1/2 inches.
    b. For compressions on infants, use only the heel of the ONE hand, or two (2) fingers.
    c. A child or an infant requires faster rates - in the range of 100 to 120 per minute - two (2) compressions per second.

Review Activity

Directions: As a review activity, complete the following exercise by writing the correct answer or the correct missing word in the spaces provided.

1. Give three signs and symptoms of cardiac arrest, one of which is an optional check.

    a. ______________________________

    b. ______________________________

    c. ______________________________

2. What does cardiac arrest mean?

    ____

    ____

3. A victim with cardiac standstill must have circulation reestablished within ______ minutes in order to limit the possibility of brain damage.

4. When doing cardiac compression, what part of the rescuer's hand is to come into contact with the victim's sternum? ______________________

5. The sternum must be depressed __________ to __________ inches during cardiac compression, in order to force the blood out of the heart for circulation to the vital organs.

LEARNING ACTIVITIES - continued

6. The rate of cardiac compression for an adult is ____________________.

7. The rate of cardiac compression for a child is ______________.

8. The rescuer's hands may be lifted off the victim's sternum during each compression. ____________________ (True or False)

9. During cardiac compression, the rescuer's fingers rest on the victim's chest.

    ____________________ (True or False)

10. An infant's chest is compressed 1-1/2 to 2 inches during the compression procedure. ____________________ (True or False)

NOTE: Answers to all of the questions in this exercise can be found in the information you have just read in this activity.

Summary of Ventilation and Circulation by ONE Rescuer

1. IMMEDIATELY ventilate the lungs rapidly, four times (quickly taking a breath of fresh air between each ventilation).
2. Apply manual heart compressions fifteen times, at a rate of about once every second.
3. Quickly ventilate the lungs two times.
4. Resume heart compressions.

REPEAT this CYCLE continuously - 15 compressions to two ventilations

Artificial Respiration and Circulation by TWO Rescuers

1. Rescuer #1 IMMEDIATELY ventilates the lungs rapidly, three (3) times.
2. Rescuer #2 provides uninterrupted manual heart compressions every second (60 to 80 times a minute).

    The rescuer doing chest compressions should COUNT OUT LOUD, saying:

    1 - one thousand
    2 - one thousand
    3 - one thousand

    so that Rescuer #1 will know when to ventilate the victim.

LEARNING ACTIVITIES - continued

3. Rescuer #1 interposes a ventilation cycle between every five (5) heart compressions. (During the upstroke of each 5th heart compression, the second rescuer ventilates the victim.)

CHECK! ARE YOUR EFFORTS EFFECTIVE? LOOK FOR THE FOLLOWING RESULTS.

1. Must Occur . . .
    - a. pupils must constrict
    - b. color must improve
    - c. a second person must detect a carotid pulse with each cardiac compression
2. May Occur . . .
    - a. spontaneous respiration may begin
    - b. the victim may move

LEARNING ACTIVITIES - continued

Review Activity

Directions: For a review of important points in CPR, read the following chart.

CARDIOPULMONARY RESUSCITATION

RESCUERS	Ratio of Compression to Breath	Rate of Compression
One	15:2	80 times per minute
Two	5:1	60 times per minute

Type of Patient	Part of Hand Used for Compression	Hand Position	Depress Sternum	Rate of Compression
Adult	Heel of Hand	Mid Sternum	1-1/2 to 2 inches	60 to 80 per minute
Child	Heel of Hand	Mid Sternum	3/4 to 1-1/2 inches	80 to 100 per minute
Infant	Tips of Index and Middle Fingers	Mid Sternum	1/2 to 3/4 inches	80 to 100 per minute

LEARNING ACTIVITIES - continued

Demonstration Activity

Directions: Practice the following procedure on a manikin, and then demonstrate your Cardiopulmonary Resuscitation skills to your instructor.

CARDIOPULMONARY RESUSCITATION

ACTIVITY	PERFORMANCE	*S	**U
Establish Unresponsiveness	1. Place victim in correct position 2. Shake victim's shoulder gently 3. Shout, "Are you OK?" 4. Call for help		
Establish Breathlessness	1. Kneel properly 2. Correctly hyperextend victim's neck 3. Ear over victim's mouth, observe chest		
Ventilations	1. Keep neck hyperextended 2. Pinch nostrils 3. Seal mouth correctly 4. Give 4 quick breaths		
Establish Pulselessness	1. Fingers palpate for carotid pulse on near side		
Establish Compressions *1 Rescuer:* 15 Compressions to 2 Ventilations *2 Rescuers:* 5 Compressions to 1 Ventilation	1. Proper body position 2. Landmark check 3. Proper position of hands 4. Vertical compression 5. Proper rate (adult and child) 6. No bouncing 7. Ventilate		
Check for return of pulse and spontaneous breathing	1. Check pulse and breathing 2. If no pulse, resume ventilations and compressions		

*S—Satisfactory
**U—Unsatisfactory

LEARNING ACTIVITIES - continued

ACTIVITY #3. Obstructed Airway

Directions: Read the following information, study the illustrations of the procedures for administering first aid for an obstructed airway, and complete the demonstrations for your instructor.

Reasons for an obstructed airway may vary from having a closed mouth; a displaced tongue; entrapped food or foreign objects such as meat, dentures, buttons; edema from allergic reactions; or excess mucous. Upper airway obstruction can cause unconsciousness and cardiopulmonary arrest, but, FAR MORE OFTEN, upper airway obstruction is caused by unconsciousness and cardiopulmonary arrest.

Because early recognition of airway obstruction is the key to successful management, it is important to be able to differentiate this emergency from fainting, stroke, heart attack, epilepsy, drug overdose, or other conditions which cause sudden respiratory failure.

First Aid For An Obstructed Airway

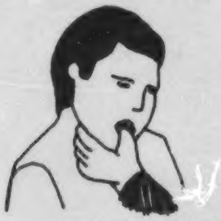
Conscious Victim:

Recognition signs for a possible airway obstruction in an infant are:

1. The infant is unable to cry.
2. The infant may produce a shrill, crowing-like noise.

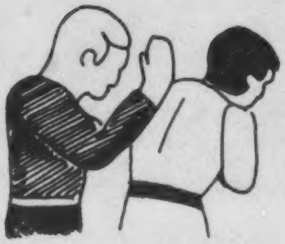
The universal distress signal characterizing an apparent obstructed airway in the conscious adult is the victim clutching at the throat.

1



If the victim can speak, cough, or breathe, do not interfere.

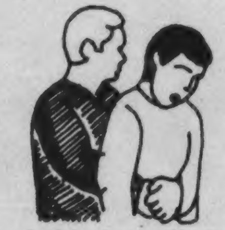
2



If the victim cannot speak, cough, or breathe, give 4 quick back blows.

(Deliver the blows between the shoulder blades, using the heel of one hand. Support the victim with your other hand on the front of the chest.)

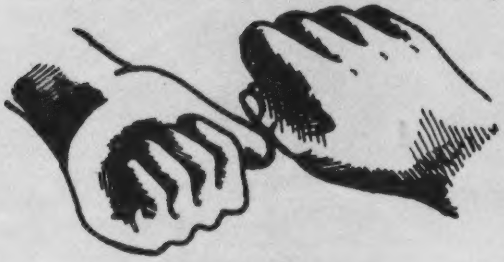
3



If unsuccessful, Give 4 upward abdominal thrusts.

. . . Repeat above sequence . . . Be persistent . . .

Continue uninterrupted until advanced life support is available.

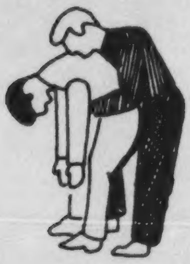


Stand behind the victim. Wrap your arms around the victim's waist.

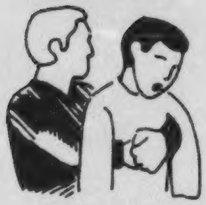
Place your fist, thumb side against the victim's abdomen, slightly above the navel and below the rib cage.

Repeat several times if necessary.

This is also known as the HEIMLICH MANEUVER.



Whenever possible, the victim's head should be lower than the chest, to make use of gravity.



or 4 backward thrusts.

This technique is useful if victim's girth is very large, or if victim is pregnant.

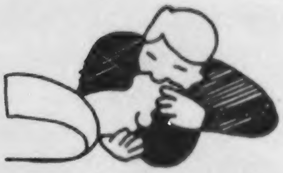
LEARNING ACTIVITIES - continued

Unconscious Victim:

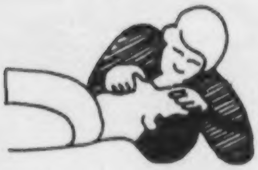
Sudden collapse and loss of consciousness is a serious emergency. Even when someone has been eating and this emergency occurs, it may be due to fainting, stroke, or heart attack, as well as a foreign body obstructing the airway.

1

Open airway and try to ventilate



or



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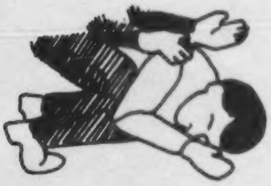
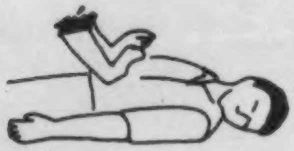


If unsuccessful,
give 4 quick back blows

Roll victim toward you;
use your thigh for support.
Use heel of palm for back blows.

LEARNING ACTIVITIES - continued

3



If unsuccessful, give 4 abdominal or chest thrusts

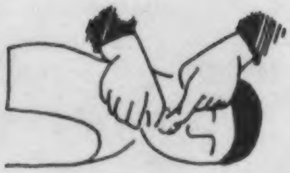
Place victim flat on back.

Face victim and kneel astride hips.

With one of your hands on the other, place the heel of your bottom hand on the victim's abdomen, slightly above the rib cage.

Press into the victim's abdomen with a quick upward thrust.

4



If unsuccessful, try finger probe

. . . Repeat above sequence . . . Be persistent . . . Continue uninterrupted until advanced life support is available.

LEARNING ACTIVITIES - continued

Demonstration Activity

Directions: With another student taking the place of a victim, gently practice the following procedure; then demonstrate the procedure to your instructor.

OBSTRUCTED AIRWAY—UNCONSCIOUS VICTIM

ACTIVITY	PERFORMANCE	*S	**U
Establish Unresponsiveness	1. Place victim in correct position 2. Shake shoulder gently 3. Shout, "Are you OK?" 4. Call for HELP		
Establish Breathlessness	1. Kneel properly 2. Correctly hyperextend neck 3. Ear over mouth, observe chest		
Attemp to Ventilate	1. Hyperextend neck 2. Pinch nostrils 3. Seal mouth correctly 4. Attempt ventilations 5. Airway is obstructed		
4 Back Blows	1. Roll victim toward you, using your thigh for support 2. Give 4 forceful, rapidly delivered blows to back, between shoulder blades 3. Use heel of palm for back blows		
4 Abdominal Thrusts	1. Position yourself with your knees close to the victim's hips 2. Place heel of one hand between victim's lower sternum and navel, and your other hand on top 3. Press into victim;s chest with 4 quick, downward thrusts		
-OR- 4 Chest Thrusts—	1. Position yourself with your knees close to the victim's chest 2. Landmark check 3. Proper position of hands 4. Vertical compressions 5. Press into victim's chest with 4 quick, downward thrusts		
Check for Foreign Body	1. Turn victim's head to side 2. Cross-fingered techniques or tongue-jaw lift 3. Sweep deeply into mouth with hooked finger		
Repeat above Sequence	1. Continue, uninterrupted, until advance life support is available		

* Satisfactory ** Unsatisfactory

LEARNING ACTIVITIES - continued

Demonstration Activity

Directions: With another student acting as the victim, gently practice the following procedure; then demonstrate the procedure to your instructor.

OBSTRUCTED AIRWAY—CONSCIOUS VICTIM

ACTIVITY	PERFORMANCE	*S	**U
Identify victim with airway obstruction —	1. Rescuer must determine if the victim is able to speak; if able to speak, DO NOT interfere. If unable to speak, proceed with rescue attempt.		
4 Back Blows —	1. Stand in proper position. 2. Support victim's chest with one hand. 3. With your other hand, deliver 4 sharp blows rapidly and forcefully to the back, directly between the shoulder blades. 5. Use the heel of your palm.		
4 Abdominal Thrusts — -OR- 4 Chest Thrusts —	1. Stand behind victim. Wrap your arms around victim's waist. 2. Make a fist with your one hand, grasp it with your other hand and place the thumb side of your fist between the victim's sternum and navel. 3. Press your fist into victim's abdomen with quick, UPWARD thrusts. 1. Stand behind victim and place your arms under the victim's armpits, to encircle the chest. 2. Grasp your fist with your other hand, and place thumb-side of your fist on the victim's sternum. Press, with quick, UPWARD thrusts.		
Continue to identify airway obstruction —	1. Continue to inquire if victim can speak. 2. Alternate the maneuvers until effective.		

*S—Satisfactory
**U—Unsatisfactory

LEARNING ACTIVITIES - continued

ACTIVITY #5. Review Activity

Directions: As a review exercise, complete the following.

1. List four possible reasons for an obstructed airway.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

2. Universal distress signal characterizing an obstructed airway is:

   ____

3. The maneuver used to assist the choking victim is called the:

   ____

4. When using the Heimlich Maneuver, the thrust is inward. ______________ (True or False)

5. The Heimlich Manuever can be performed with the victim positioned either upright or lying down. ______________ (True or False)

Additional Information

An Emergency Medical Services (EMS) System is a community-wide coordinated means of responding to sudden illness or death. In a hospital situation, it is announced over the P.A. system as a CODE ARREST or CODE BLUE for respiratory or a cardiac arrest. What is the number for your location?

In some hospitals there is a CODE TEAM - a group of specific people to do specified jobs throughout a CODE. For example, the emergency room physician and/or hospital cardiologist is the team leader until the patient's doctor arrives. A pharmacist is present to prepare medications. There is a respiratory therapist to help ventilate the patient's lungs. One or two orderlies may do compressions. Two to four RNs may be present to start IVs, give medication, catheterize, suction and record. LPNs and other hospital personnel may be used to run errands and to move other patients and equipment from the patient's room.

The CODE cart is a cart especially equipped for cardiac or respiratory arrest victims. This cart contains whatever may be needed in such an emergency, from tape to a defibrillator.

Find out where this cart is located on your hospital unit, in case you are asked to get it.

LEARNING ACTIVITIES - concluded

Arizona Rev. Stat. 32-1471 (Supp 1967) Provides physician and surgeon and any other person emergency aid; nonliability.

> **A physician or surgeon, or a registered nurse, graduate nurse, or a professional nurse as defined in 32-1601, licensed to practice as such in this State, or elsewhere, or any other person who renders emergency care at a public gathering or at the scene of an emergency occurrence gratuitously and in good faith shall not be liable for any civil or other damages as the result of any act or omission by such person rendering the emergency care, or as the result of any act or failure to act to provide or arrange for further medical treatment or care for the injured person, unless such person, while rendering such emergency care is guilty of gross negligence.**

This is to say that individuals who render care in an emergency are not held responsible, unless they are grossly negligent.

Now you are ready to practice CPR on the manikins provided.

Go through each exercise twice with your instructor, or to your instructor's satisfaction.

unit 3

TERMINOLOGY

The following is a list of terms, together with the definition of each. These are the terms you should recognize and understand for the successful completion of Unit 3 of the Health Occupations Program. Directions for studying and using them are given in the modules for the unit.

ANAPHYLACTIC SHOCK:	Shock which may be caused by a foreign or allergenic substance.
BLOOD PRESSURE:	The pressure present in the large arteries of the human body.
CARDIOGENIC SHOCK:	Shock caused by the cessation of heart action.
CELLS:	The smallest unit of structure of all animals and plants.
CHARGE TICKET:	A form used to record patient's purchases of supplies.
CIRCULATION:	The blood leaving the heart and circulating through the body.
CYANOSIS:	Bluish color of skin due to lack of oxygen.
CYSTITIS:	Infection and/or inflammation of the urinary bladder.
DEFECATION:	Evacuation of bowels; movement of the bowels.
DENTURES:	False teeth which are removable.
DIABETIC:	A person whose body cannot use sugar.
DILATION:	Expanding to enlarge.
DISABILITY:	Inability to work due to physical or mental injury.
DISPOSABLE:	Item that can be thrown away; discardable.
DIURETIC:	Any agent which increases urination.
ECOLOGY:	The relationship between any living thing and its surroundings.
ELECTRIC BED:	A bed that is raised and lowered by electricity.

TERMINOLOGY - continued

ELECTROLYTE:	Chemical compounds dissolved in body fluids. The principle electrolytes are sodium, calcium, potassium, and magnesium.
ELIMINATION:	Removal of body waste through urine, bowels, emesis, skin, and respiration.
EMESIS:	Vomiting.
ENVIRONMENT:	The surroundings which affect any organism.
EVAPORATION:	Water changed into steam or vapor.
EXTERNAL:	Pertaining to the outside of the body.
F.F.:	To force fluids.
FECES:	Stools; contents of the colon.
FIRST AID:	Immediate treatment to an accident victim.
FRACTURE:	Break in a bone.
GLARE:	An uncomfortable, bright light.
HEMORRHAGE:	Severe or profuse bleeding.
HEMOTHORAX:	Blood in the chest (pleural) cavity.
HOPPER:	A receptacle used to flush urine and stools from bedpans.
HOSPITAL TEAM:	Personnel of a hospital.
HUMIDITY:	Moisture in the air.
I.D. BAND:	Bracelet worn by the patient for indentification of name, doctor, etc.
INTERNAL:	Pertaining to the inside of the body.
IRREGULAR:	Not normal.
IV:	Intravenous; the taking in of nourishment through the veins.
LAWSUIT:	A case before the court.
METABOLIC SHOCK:	Shock caused by the imbalance of body chemistry.
NONDISPOSABLE:	Items that may not be thrown away.
NURSING UNIT:	A designated patient care area of the hospital.

TERMINOLOGY - concluded

ORTHOPEDIC:	Related to the bones.
PATIENT UNIT:	The space containing the patient's bed, table, chair, etc.
PERSONAL HYGIENE:	Body cleanliness.
PHOTOPHOBIA:	The fear of or unusual intolerance to light.
PRIVATE ROOM:	A room used for one patient only.
PSYCHOGENIC SHOCK:	Shock caused by fear.
PULSE:	Heartbeat.
RESPIRATION:	Breathing; the taking in of oxygen and the giving out of carbon dioxide.
RESUSCITATION:	The restoration of breathing.
SEMI-PRIVATE ROOM:	A room used for two patients.
SENSORY PERCEPTION:	Being aware of the environment through the senses.
SEPTIC SHOCK:	Shock caused by bacterial poisons.
THERAPEUTIC:	The results obtained from any treatment.
TOURNIQUET:	Anything used to constrict an artery for the purpose of controlling bleeding.
VENTILATION:	The movement of air.
VITAL SIGNS:	Temperature, pulse, respiration, and blood pressure.
VOIDING:	Emptying of the bladder; urinating.
WARD:	A multiple-bed unit, housing three or more patients.

POST TEST

Modules A, B, C, and D

unit 3

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. The temperature and humidity of the health care facility are controlled by the:

    a. health care facility engineers
    b. housekeeping department
    c. nursing assistants
    d. maintenance department

2. Keeping safety, privacy, and neatness in the patient's unit is a duty of the:

    a. health care facility engineers
    b. housekeeping department
    c. nursing assistants
    d. maintenance department

3. The nursing assistant will maintain the patient's comfort if the patient is cold by:

    a. adjusting the thermostat
    b. notifying the nurse in charge of the present temperature
    c. adding blankets to the patient's bed
    d. forcing fluids to increase volume

4. Opening windows will increase the:

    a. humidity in the patient's unit
    b. ventilation in the patient's unit
    c. moisture in the patient's unit
    d. order in the patient's unit

5. To control noise in the health care facility, you will:

    a. remove unused equipment from room
    b. try not to drop equipment
    c. control the TV video
    d. avoid glare in sleeping areas

6. Privacy is maintained in patient area by:

    a. maintaining strict visiting hours
    b. wearing health care facility gowns
    c. wearing bedsocks
    d. closing doors to patient rooms

POST TEST - continued

7. You will eliminate some health care facility odors by:

    a. disposing of used dressings properly
    b. using heavy machinery at night
    c. wearing pastel colors
    d. rearranging flowers daily

8. Odors are also eliminated by:

    a. closing doors to patient rooms
    b. reporting broken equipment
    c. emptying urinals immediately
    d. observing the elderly

9. The patient who is easily burned is the patient who is:

    a. dehydrated
    b. vomiting
    c. alert
    d. paralyzed

10. The definition of ventilation is:

    a. external surroundings
    b. moisture in the air
    c. internal movement
    d. movement of air

11. Using a vaporizer will increase:

    a. temperature
    b. humidity
    c. glare
    d. ventilation

12. The relationship between a patient and the surroundings is known as:

    a. union
    b. ecology
    c. evaporation
    d. external

13. A frequent cause of health care facility accidents and patient injuries is:

    a. wrong treatment and falls
    b. wrong treatment and burns
    c. wrong treatment and cuts
    d. wrong treatment and fractures

POST TEST - continued

14. To positively identify a patient, you will:

    a. check the patient's wrist bracelet
    b. call the patient by first and last name
    c. make rounds to patients each hour
    d. use a title when identifying a patient - Mr., Mrs., etc.

15. To prevent falls during transportation, you will:

    a. apply safety belt and orient patient
    b. check wrist band and restrain patient
    c. manipulate stretcher from patient's head and turn to the right
    d. restrain patient and remove footrests

16. A room shared by three or more patients is a:

    a. private room
    b. semi-private room
    c. ward
    d. unit

17. A bed, bedside table, and chair, are located in a space called the:

    a. ward
    b. patient unit
    c. nursing unit
    d. hospital

18. Patient problems are discussed and solved in the:

    a. nurses' station
    b. nurses' lounge
    c. utility room
    d. conference room

19. Patient requests for medication are reported to and dispensed from the:

    a. utility room
    b. medication area
    c. nurses' station
    d. conference room

20. Bedpans, urinals, dressings, IV solutions, and treatment trays are some of the supplies found in the:

    a. examination room
    b. nurses' lounge
    c. utility room
    d. linen room

POST TEST - continued

21. Patient destinations and treatments are listed on the blackboard located in the:

    a. conference room
    b. nurses' station
    c. nurses' lounge
    d. diet kitchen

22. The nursing assistant's duty in the diet kitchen is to:

    a. prepare diets
    b. defrost refrigerator
    c. stock patient nourishments
    d. keep the area neat

23. The nursing assistant's duty in the utility room is to:

    a. remove dirty supplies from this room
    b. stock supplies
    c. keep room neat and clean
    d. none of the above

24. Which piece of equipment is usually special-ordered from the Central Supply Room?

    a. crutches
    b. wheelchair
    c. IV pole
    d. aqua k pad

25. Before and after using patient equipment, you will:

    a. return the equipment to the Central Supply Room
    b. notify the ward clerk
    c. complete a credit ticket
    d. inspect and report any necessary repairs

26. In the space provided at the bottom of your answer sheet, write the letter for each correct method of fire prevention.

    a. use ashtrays while smoking
    b. empty ashtrays in wastebaskets
    c. avoid using aerosols while smoking
    d. clean ashtrays in sand- or water-filled containers
    e. observe any patients receiving oxygen who are smoking
    f. report broken electrical cords
    g. smoke only where smoking is permitted
    h. observe elderly patients who are smoking
    i. if you smell a fire, report it
    j. observe disoriented patients while they are smoking

POST TEST - concluded

27. In the space provided at the bottom of your answer sheet, write the letter for each correct method to prevent falls.

    a. report all spills to housekeeping
    b. raise siderails on beds at night
    c. answer call lights immediately
    d. check vital signs every four hours
    e. assist sedated (medicated) patients during ambulation
    f. be certain signal light is in drawer
    g. have beds of ambulatory patients in high position
    h. force fluids on all post-surgical patients
    i. make rounds to patients frequently after lights are out
    j. frequently offer bedpans and urinals to patients receiving IV therapy

28. In the space provided at the bottom of your answer sheet, write the letter of each type of patient susceptible to health care facility accidents.

    a. paralyzed
    b. children
    c. sedated
    d. confused
    e. elderly

ANSWERS TO POST TESTS

Modules A, B, C, and D

1. a
2. c
3. c
4. b
5. b
6. d
7. a
8. c
9. d
10. d
11. b
12. b
13. a
14. a
15. a
16. c
17. b
18. d
19. b
20. c
21. b
22. d
23. d
24. d
25. d
26. a, c, d, f, g, h, i, j
27. b, c, e, i, j
28. a, b, c, d, e,

POST TEST

Modules E and F

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. Direct pressure is used for:

   a. bleeding
   b. burns
   c. fractures
   d. abrasions

2. To provide first aid to a victim with a laceration, you will:

   a. incise the wound
   b. cleanse the wound
   c. raise the feet
   d. apply a tourniquet

3. Which item would be the best to use in making a tourniquet?

   a. a scarf
   b. a rope
   c. a wire
   d. a cord

4. The best method for controlling bleeding from a finger is to use:

   a. direct pressure
   b. a tourniquet
   c. pressure to the pressure points
   d. warm water

5. You will need a splint to treat:

   a. shock
   b. burns
   c. poisoning
   d. fractures

6. You will elevate the victim's feet to treat:

   a. shock
   b. fractures
   c. cardiac arrest
   d. poisoning

POST TEST - continued

7. In third degree burns you will treat the victim for:

   a. exhaustion
   b. stroke
   c. shock
   d. hemorrhage

8. Mary Jane has just suffered a third degree burn. To treat this condition you will:

   a. cover the burn with clean dressings
   b. apply an antiseptic cream
   c. do nothing until she sees a doctor
   d. apply cold cloths to the burn

9. To treat a victim with heat exhaustion, you will:

   a. give cold salt water to drink
   b. make the victim vomit
   c. cover the victim with a blanket
   d. position the victim with the head up

10. To treat a patient in shock, you will:

    a. elevate the head
    b. give a glass of salt water
    c. apply direct pressure
    d. cover the patient

11. If the victim has swallowed kerosene, you will:

    a. remove victim from the sun
    b. dilute the poison
    c. make victim vomit
    d. sponge victim with cold water

12. The victim has just swallowed five tranquilizers. To treat this condition, you will:

    a. make the victim lie down
    b. give milk
    c. do NOT induce vomiting
    d. induce vomiting

13. When giving artificial respiration, you will first:

    a. pinch nostrils shut
    b. press on stomach
    c. turn head to side
    d. check for breathlessness

POST TEST - concluded

14. Symptoms of cardiac arrest are dilated pupils and:

    a. no respiration and increased pulse
    b. no respiration and flushed face
    c. no respiration and elevated temperature
    d. no respiration and no pulse

15. When performing artificial respiration you will continue until:

    a. thirty minutes have passed
    b. you are tired
    c. the victim breathes
    d. someone tells you to stop

16. When a foreign body is obstructing the air passage and cannot be removed with fingers, you will:

    a. deliver four (4) firm blows over the spine, between the shoulder blades
    b. call for a surgeon
    c. perform an emergency tracheotomy
    d. keep probing in throat with finger

17. In order to be effective, the force used for a cardiac compression on an adult must depress the sternum at least:

    a. 4 to 5 inches
    b. 3 to 3½ inches
    c. 2 to 3 inches
    d. 1½ to 2 inches

18. When there are two rescuers, the ratio of chest compressions to breathing is:

    a. 5 to 1
    b. 8 to 1
    c. 10 to 2
    d. 15 to 2

19. Infants and small children are ventilated in basically the same way as adults, except that respirations are:

    a. faster and more forceful
    b. slower and more forceful
    c. faster and less forceful
    d. slower and less forceful

20. At the bottom of your answer sheet, define the term "First Aid". (DO NOT WRITE ON THIS TEST SHEET.)

ANSWERS TO POST TESTS

Modules E and F

1. a
2. b
3. a
4. a
5. d
6. a
7. c
8. a
9. a
10. d
11. b
12. d
13. d
14. d
15. c
16. a
17. d
18. a
19. c
20. Immediate care given to an accident victim

Unit 4 presents anatomy and physiology. The organization of the human body, its systems, structures and functions are emphasized.

ANATOMY AND PHYSIOLOGY FOR THE HEALTH CARE WORKER

Module A - Organization of the Body
Module B - Musculoskeletal System
Module C - Integumentary System
Module D - Digestive System
Module E - Circulatory System
Module F - Respiratory System
Module G - Urinary System
Module H - Endocrine System
Module I - Reproductive System
Module J - Nervous System and Special Senses
    J1 - Nervous System
    J2 - The Eye
    J3 - The Ear
Terminology
Post Tests:
1. Module A
2. Module B
3. Module C
4. Module D
5. Module E
6. Module F
7. Module G
8. Module H
9. Module I
10. Module J1
11. Module J2 and J3

Answer Sheets

When you have completed the Learning Activities and are ready for a test, or wish to challenge a test, please see your instructor.

Suggested References

Anthony, Catherine Parker. Structure & Function of the Body. St. Louis: The C.V. Mosby Co., 1980.

ANATOMY AND PHYSIOLOGY FOR HEALTH CARE WORKERS

Module A - Organization of the Body

RATIONALE

The organization of the human body is like that of a very complex machine. It is important that you learn to distinguish between body structure and body function and be able to describe the observations you make about the needs of your patient. An auto mechanic must know the parts of a car and how they function before deciding what repairs are needed. You also need to understand "healthy functioning" of a body in order to recognize when something is not normal.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify four of the planes into which the body is divided.
2. Identify one organ found in two of the five cavities.
3. Identify the organization of the body.
4. Identify the structure and function of the cell.
5. Identify the function of four of the nine body systems.
6. Identify two organs found in three of the nine body systems.
7. Identify terms relating to the organization of the body.

LEARNING ACTIVITIES

Directions: All the information you need for successful completion of Module A is included in this section. The written activities are included to help you prepare for the Post Test and learn the information presented. You will be instructed what to do as you progress with the module. Always go to your instructor if you have any questions.

ACTIVITY #1. Location of Body Parts

Directions: Read the following.

Medical personnel use many different terms to help describe the location of body parts and describe the organization of the body. Many of these terms will seem unimportant to you at this time, but eventually you will learn to use all of them correctly. Please learn the terms as you encounter them. When you do not understand their meanings, ask your instructor to explain them.

LEARNING ACTIVITIES - continued

Two of the terms you should learn immediately in this unit are anatomy and physiology.

Anatomy is the structure of the body or how it is put together.

Physiology is the function of the body and how it works.

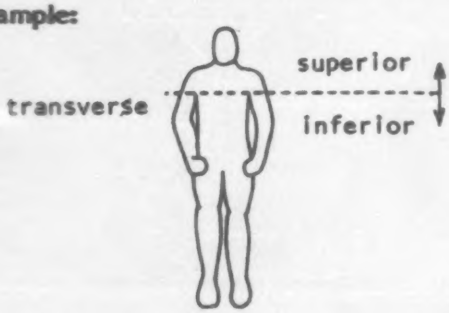
Planes

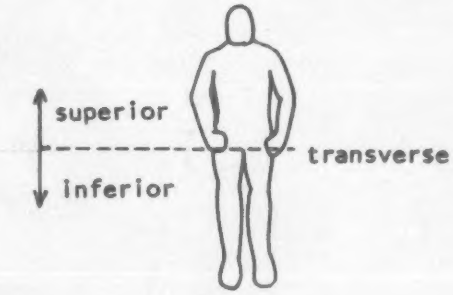
Special terms are used to describe the relationship of one part of the body to another. Imaginary lines or planes help us see these relationships. The human body is divided by three such planes - transverse, midline, and frontal.

TRANSVERSE - lines drawn from side to side, at any place on the body.

Superior - body parts above the line
Inferior - body parts below the line

Example:

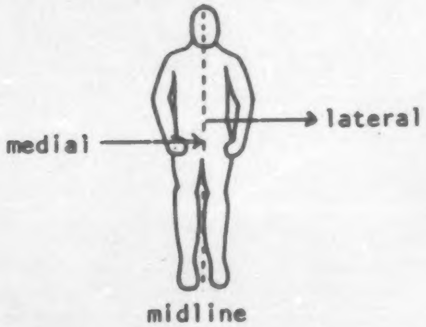




MIDLINE - line drawn through the center of the body from head to toe, dividing the body into two equal sides.

Medial - body parts close to the midline
Lateral - body parts away from the midline

Example:

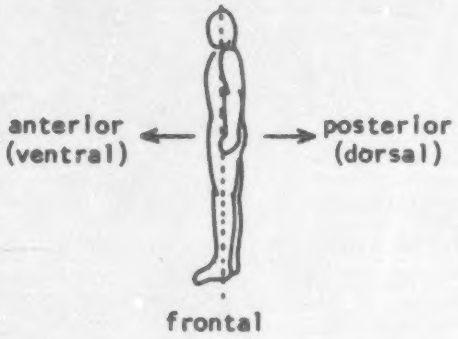


LEARNING ACTIVITIES - continued

FRONTAL - line drawn to divide the body into back and front

Anterior (ventral) - body parts in front of the line
Posterior (dorsal) - body parts behind the line

Example:

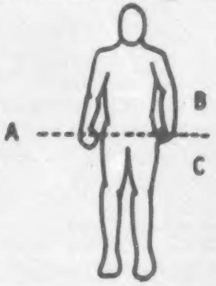


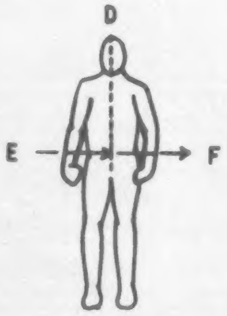
For example, in a transverse incision across the abdomen, the gallbladder would be superior to the incision, and the appendix would be inferior to the incision.

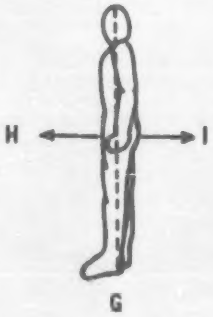
These terms are used to describe positions or locations in the body. This exercise will help determine if you have learned the planes of the body.

Exercise:

In the blanks provided, give the correct terms for the planes represented by the letters on the diagrams.







A. ______________________________

B. ______________________________

C. ______________________________

D. ______________________________

E. ______________________________

F. ______________________________

G. ______________________________

H. ______________________________

I. ______________________________

If you do not remember all the answers, look back to the information you have just read.

LEARNING ACTIVITIES - continued

ACTIVITY #2. Proximal and Distal Locations in the Body

Directions: Read the following.

Two other terms relating to locations in the body are proximal and distal. These terms are used to show the relationship between the parts of the body and their attachment to the body. The arm and hand, for example, are attached to the body at the shoulder. The hand is referred to as distal or far since it is farther away from the shoulder than the elbow. The elbow may then be referred to as proximal or nearer since it is closer to the shoulder than the hand. The wrist would also be proximal since it is closer to the shoulder than the hand; however, the wrist would be distal to the elbow because the elbow is closer to the shoulder than the wrist.

distal - farther away from the point of attachment
proximal - closer to the point of attachment

Remember that a body part cannot be just proximal or distal but must be proximal or distal to another body part such as the shoulder to the elbow or the hand to the elbow. Also, remember that proximal means near and distal means far. Your instructor can help you if you are still having trouble understanding these terms.

ACTIVITY #3. Cavities

Directions: Read the following.

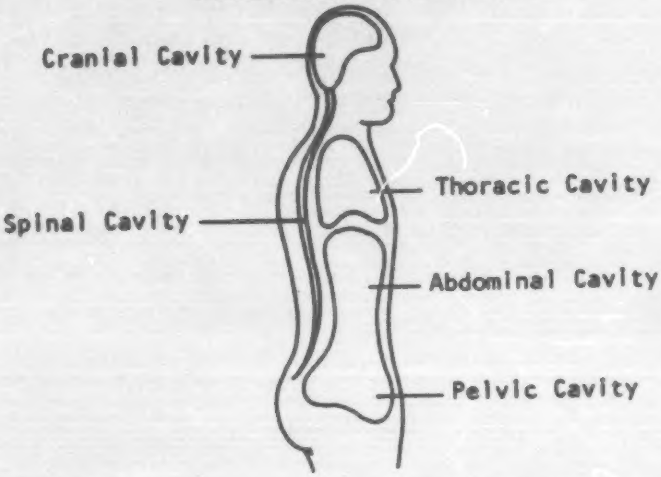
Another way the body is divided is by cavities. These are solid looking body spaces which contain vital organs like the heart, stomach, and brain. You must learn five of these cavities and at least one organ in each cavitity.

The body cavities are lined with sheets of thin tissue called membranes. The membranes serve to separate the organs into different cavities and to prevent undue friction -- rubbing -- between organs. The meninges are the continuous membranes which line both the cranial and spinal cavities. The abdominal cavity is divided by the peritoneal membrane into the peritoneal cavity, which means it is surrounded by the peritoneum, and the retroperitoneal space, which means it is behind the peritoneum. The pelvic cavity lies underneath the peritoneal membrane. There is a muscle, the diaphragm, which separates the thoracic cavity from the abdominal cavity.

Study the diagram on the following page.

LEARNING ACTIVITIES - continued

FIVE MAIN CAVITIES



CAVITIES	ORGANS FOUND IN EACH CAVITY
1. Cranial	Brain, Pituitary Gland, Pineal Body
2. Spinal	Spinal Cord and Nerves
3. Thoracic	Lungs, Heart, Great Blood Vessels, Thymus Gland
4. Abdominal	Stomach, Small Intestine, most of Large Intestine
a. Peritoneal Cavity	Liver, Gallbladder, Pancreas, Spleen
b. Retroperitoneal Space	Kidneys, Adrenal Gland, Ureters
5. Pelvic	Female: Uterus--Oviducts, Ovaries, Urinary Bladder, Urethra, Rectum Male: Seminal Vesicle, Prostate Gland, Ejaculatory Ducts, Urinary Bladder, Urethra

Review Exercise

Directions: Complete the following exercise, using the blank spaces provided for your answers.

Name the 5 main body cavities, and list one organ found in each cavity.

Cavity	Organ
1. ______________________	______________________
2. ______________________	______________________

LEARNING ACTIVITIES - continued

	Cavity	Organ
3.		
4.		
5.		

What is a cavity? ____________________

What divides the thoracic cavity from the abdominal cavity?

The answers to all of the questions in this exercise can be found in the material you have read in Activity #3 of this module. Check your work.

ACTIVITY #4. Organization of the Body

Directions: Read the following.

The next several pages of this module explain the organization of the body. The body is organized into a complex machine from cells which combine to perform many different functions. You will learn how cells combine to form tissue, and how various types of tissue combine to form organs. These organs then make up the nine systems about which you will study in Modules B through J of this unit.

The Cell

The microscopic unit on which the physical structure of the body is built is the living cell. The cell may be compared to a brick in a building. Just as a building is composed of many bricks arranged in various ways, so too, the physical structure of the body is composed of trillions and trillions of cells arranged in various ways to form tissue, organs, and systems. Cells are microscopic in size, which means they can be seen only through a microscope. Two thousand of them lined up would form a row only one inch long. Cells differ in shape as well as size. Some resemble tiny bricks; some are flat like the scales of a fish; some are long and slender like bits of thread; some are irregular; but they all have the same three parts.

All cells contain a living substance called cytoplasm, a cell membrane, and a nucleus. The cytoplasm is a colorless, jelly-like, living liquid which carries on all the necessary activities of the living organism such as breathing, growing, and reproducing. The living material found in the nucleus regulates the activities of the cell and

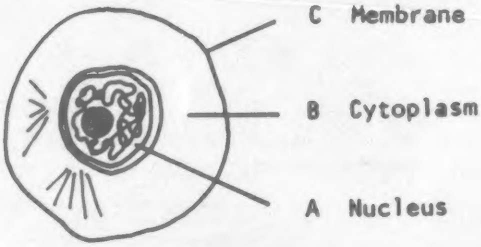
LEARNING ACTIVITIES - continued

plays an important role during reproduction. The cell cannot live without a nucleus. It divides exactly in half during reproduction so that each new cell thus formed has these same three parts: cytoplasm, nucleus, and membrane. The cell membrane separates one cell from another and allows food to enter through absorption, and also allows waste materials to leave the cell. We see, then, that on a tiny scale this living cell carries on the same functions as the body itself. The process of reproduction of cells is called mitosis. This is shown in the illustration on this page.

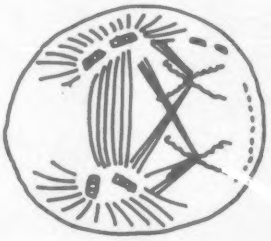
Cells are very short lived. The body constantly replenishes lost cells. Old cells die and are eliminated as waste products, or they are washed away with the daily bath. Odor builds up on the body if the old dry cells on the skin are not washed away.

THE BODY CELLS

In the illustration below, diagrams 2 through 5 show the process of mitosis.



1.



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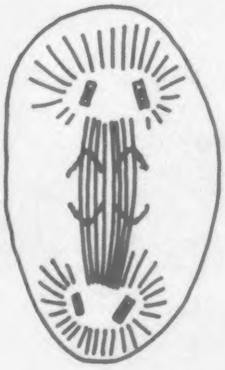

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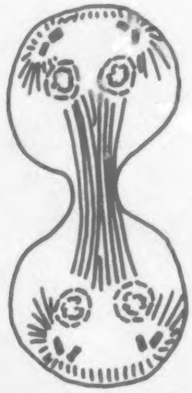

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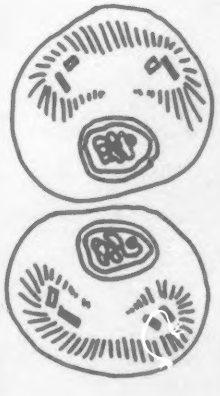


5.

LEARNING ACTIVITIES - continued

Tissue

Since the human body is so complex, certain groups of cells are set aside to perform special duties more efficiently. A group of similar cells which performs one special function is called a tissue. Each tissue has its own specialized structure to accomplish a particular function; therefore, tissues are special groups of cells which carry on particular activities. There are four basic tissue types:

1. Epithelial tissue - covers the body as skin, and lines body cavities in the form of membranes. The cells are close together and are specialized for absorption, secretion, and protection. Another example would be the peritoneal membrane which helps to separate the abdominal cavity.

2. Connective tissue - is found throughout the body. It holds other tissues together. The many forms of connective tissue include blood, bone, cartilage, and tendons.

3. Muscular tissue - has cells which have the special ability to shorten or contract, and to lengthen or relax. When muscles are attached to bones, they enable the body to move. Some muscles help to form the walls of organs. Muscles are separated into voluntary or those you can control, and involuntary or those you cannot control, such as your stomach.

4. Nervous tissue - extends from the brain and spinal cord throughout the body. This tissue carries messages and regulates body functions.

Review Exercise

Directions: Answer the following questions concerning cells. The answers can be found in the material you have read in Activity #4 of this module.

1. All living things are made up of units called cells. How would you describe the size of cells? ____

____

2. How would you describe the shapes of cells? ____________________

____

3. Describe the function of each of the three parts of a cell.

   a. cell membrane ____________________

   b. cytoplasm ____________________

   c. nucleus ____________________

4. Name the process of cell reproduction as shown in diagrams 2, 3, 4, and 5 of the illustration of Body Cells on page 7 of this module.

____

ANATOMY AND PHYSIOLOGY FOR HEALTH CARE WORKERS

Module A - Organization of the Body

RATIONALE

The organization of the human body is like that of a very complex machine. It is important that you learn to distinguish between body structure and body function and be able to describe the observations you make about the needs of your patient. An auto mechanic must know the parts of a car and how they function before deciding what repairs are needed. You also need to understand "healthy functioning" of a body in order to recognize when something is not normal.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify four of the planes into which the body is divided.
2. Identify one organ found in two of the five cavities.
3. Identify the organization of the body.
4. Identify the structure and function of the cell.
5. Identify the function of four of the nine body systems.
6. Identify two organs found in three of the nine body systems.
7. Identify terms relating to the organization of the body.

LEARNING ACTIVITIES

Directions: All the information you need for successful completion of Module A is included in this section. The written activities are included to help you prepare for the Post Test and learn the information presented. You will be instructed what to do as you progress with the module. Always go to your instructor if you have any questions.

ACTIVITY #1. Location of Body Parts

Directions: Read the following.

Medical personnel use many different terms to help describe the location of body parts and describe the organization of the body. Many of these terms will seem unimportant to you at this time, but eventually you will learn to use all of them correctly. Please learn the terms as you encounter them. When you do not understand their meanings, ask your instructor to explain them.

LEARNING ACTIVITIES - continued

Two of the terms you should learn immediately in this unit are anatomy and physiology.

Anatomy is the structure of the body or how it is put together.

Physiology is the function of the body and how it works.

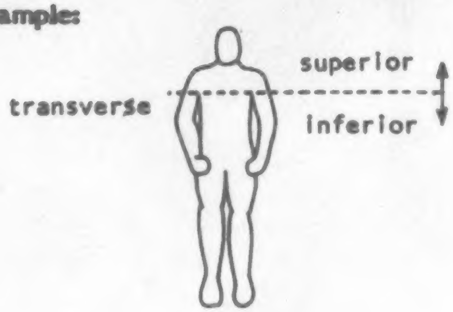
Planes

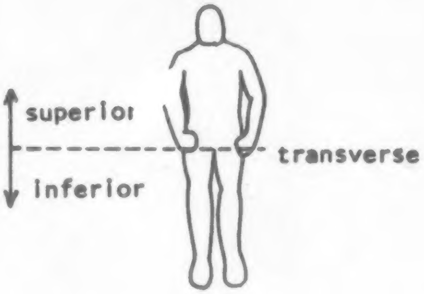
Special terms are used to describe the relationship of one part of the body to another. Imaginary lines or planes help us see these relationships. The human body is divided by three such planes - transverse, midline, and frontal.

TRANSVERSE - lines drawn from side to side, at any place on the body.

Superior - body parts above the line
Inferior - body parts below the line

Examples:

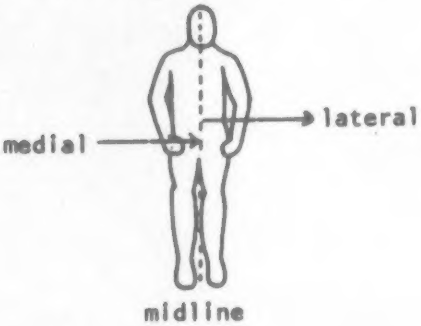




MIDLINE - line drawn through the center of the body from head to toe, dividing the body into two equal sides.

Medial - body parts close to the midline
Lateral - body parts away from the midline

Examples:



LEARNING ACTIVITIES - continued

Organs and Systems

Tissues which are grouped together to assist in carrying out a special activity are called an organ. For example, the stomach is an organ which contains nerve tissue, muscular tissue, epithelial tissue, connective tissue, and circulates blood tissue. All these tissues contribute to the function of the stomach. A human arm is composed of bone tissue, muscle tissue, nerve tissue, epithelial tissue, fat, cartilage, and blood tissue.

Organs which are grouped together to perform a special function of the body are called a system. Thus, the digestive system has the special function of changing solid food into a liquid. All the organs which contribute in any way to this function are part of the digestive system. For example, our digestive system includes the following organs: mouth, throat, esophagus, stomach, salivary glands, small intestine, liver, pancreas, and large intestine. The circulatory system includes the heart, arteries, veins, capillaries, blood, lymphatics, and lymph.

As we study each of the systems of the human body, we shall learn how each one is adapted to carry on its own particular activity. The systems of the body which we shall study are the musculoskeletal, digestive, respiratory, circulatory, reproductive, urinary, endocrine, integumentary and nervous systems.

As a review, you should remember that the organization of the body is made up of cells ⟶ tissues ⟶ organs ⟶ systems. Different kinds of cells form together to make up specialized tissue and different kinds of tissues combine to make up organs.

Study the chart below. It will help you to remember the body systems and their functions and the organs that group together to carry out these functions.

BODY SYSTEMS	FUNCTIONS	ORGANS
Integumentary	Protects, regulates heat, contains sense organs of perception	Skin, hair, nails; sweat and oil glands
Respiratory	Supplies 0_2 for the cells	Nose, pharynx, larynx, traches, bronchi, lungs, sinuses
Circulatory	Carries oxygen and food to the cells	Heart, arteries, veins, capillaries, spleen, lymph nodes, lymphatic vessels
Musculoskeletal	Supports and protects the body	Bones, joints, muscles, tendons, ligaments
Endocrine	Helps direct and coordinate body functions by secreting hormones into the blood stream	Parathyroid, pituitary gland, thyroid gland, pineal body, ovaries, adrenal gland, thymus, testes, islands of Langerhans
Nervous	Carries messages	Brain, spinal cord, nerves, ganglia

LEARNING ACTIVITIES - continued

BODY SYSTEMS	FUNCTIONS	ORGANS	
Gastrointestinal	Takes in food and eliminates solid waste	Mouth, esophagus, intestines, gallbladder, pharynx, liver, stomach, appendix, pancreas, teeth, tongue, salivary glands	
Urinary	Removes liquid waste	Kidneys, ureters, urinary bladder, urethra	
Reproductive	Provides environment for birth	**Male** testes urethra epididymis seminal vesicles and ducts ejaculatory ducts prostate gland bulbourethral glands penis spermatic cord	**Female** breasts ovaries uterus oviducts vagina vulva bartholin glands

Review Exercise - Basic Anatomy of Organs and Systems

Directions: Match Column 1 with Column 2. Answers can be found on the last page of this module.

COLUMN 1	COLUMN 2
1. ___ Groups of organs working together	A. Organ
2. ___ Allows new human to be born	B. System
3. ___ Removes liquid waste	C. Endocrine System
4. ___ Takes in food	D. Musculoskeletal System
5. ___ Two or more types of tissue	E. Nervous System
6. ___ Helps direct and coordinate body functions	F. Circulatory System
7. ___ Supports and protects	G. Digestive System
8. ___ Carries messages	H. Respiratory System
9. ___ Takes in oxygen for the cells	I. Integumentary System
10. ___ supplies the cells with food	J. Urinary System
11. ___ Contains sense organs of perception	K. Reproductive System

LEARNING ACTIVITIES - continued

ACTIVITY #5. Terminology

Directions: Consult the terminology section of this unit and study the definitions of the following terms.

1. Anatomy
2. Cavity
3. Cell
4. Diaphragm
5. Membranes
6. Mitosis
7. Organ
8. Physiology
9. System
10. Tissue

ACTIVITY #6. Exercise - Organization of the Body

Directions: Using the blank spaces provided, complete the following exercise. Answers to all of the questions can be found in the material you have read in this module. If you need help, ask your instructor.

1. Define the following terms:

   a. Anatomy ____

   ____

   b. Physiology ____

   ____

2. Name four cavities into which the body is divided, and name one of the organs in each cavity.

	CAVITY	ORGAN
a.	____________________	____________________
b.	____________________	____________________
c.	____________________	____________________
d.	____________________	____________________

3. Name the three main parts of the cell.

   a. ______________ b. ______________ c. ______________

LEARNING ACTIVITIES - continued

4. Name the process of reproduction of a cell. ____________________

5. Tissue is a substance made up of ____________________ .

6. Name five systems of the body and two of the organs in each of the five systems you name.

	SYSTEM	ORGANS
a.	________	________
b.	________	________
c.	________	________
d.	________	________
e.	________	________

7. Name three types of tissue.

   a. ____________________

   b. ____________________

   c. ____________________

8. A line drawn from side to side across the body is called a ____________ .

9. Body parts which are from the midline are defined as ____________ .

ACTIVITY #7. Exercise - Organization of the Body

Directions: The following exercise is a review of the material you have read in this module. Its purpose is to help you prepare for the Post Test. Complete the exercise by filling in the blanks. If you have any problems or need help, ask your instructor.

1. The study of the structure of the body is defined as ____________ .

2. The study of the function of the body is known as ____________ .

3. Define the following terms:

   a. Transverse: ____________________

      It divides the body into ____________ and ____________ .

LEARNING ACTIVITIES - continued

b. Midline: ____________________

It divides the body into ____________ and ____________.

Medial is defined as ____________________.

Lateral is defined as ____________________.

c. Frontal line is defined as ____________________.

It divides the body into ____________ and ____________.

4. A term meaning close to a point of attachment is ____________.
5. A term meaning far away from a point of attachment is ____________.
6. A body space containing organs is a ____________.
7. Membranes are tissue sheets used to line ____________.
8. Name the five body cavities.

a. ____________ e. ____________

b. ____________ f. ____________

c. ____________ g. ____________

d. ____________

9. The thoracic and abdominal cavities are divided by the ____________.
10. The definition of a cell is ____________________.
11. A function of cytoplasm is to ____________________.
12. The cytoplasm carries on all the necessary ____________ of the cell.
13. Name the functions of the cell membrane.

a. ____________________

b. ____________________

14. Name the function of the nucleus. ____________________

LEARNING ACTIVITIES - continued

15. In the space below, make a drawing of a cell.

16. On the drawing you have just completed above, label the three structures of the cell.

17. Tissues are defined as ______________________________.

18. Name the four types of tissue.

a. ____________________ c. ____________________

b. ____________________ d. ____________________

19. The covering of the body is ____________________ tissue.

20. Tissue that holds other tissue together is called ____________________.

Some examples of this type of tissue are:

a. ____________________ b. ____________________

c. ____________________ d. ____________________

21. The tissue that carries messages and regulates body functions is known as ______________________________.

22. Cells form tissue. Tissue forms ______________________________.

23. Without the nucleus, the cell would ______________________________.

24. Name the nine systems of the body. a. ____________________

b. ____________________ c. ____________________

d. ____________________ e. ____________________

f. ____________________ g. ____________________

h. ____________________ i. ____________________

LEARNING ACTIVITIES - concluded

25. Name two organs in each of the nine systems.

a. ______________________________ ______________________________

b. ______________________________ ______________________________

c. ______________________________ ______________________________

d. ______________________________ ______________________________

e. ______________________________ ______________________________

f. ______________________________ ______________________________

g. ______________________________ ______________________________

h. ______________________________ ______________________________

i. ______________________________ ______________________________

NOTE: Answers to all of the questions in this exercise can be found in the material you have read throughout this module. Remember, ask your instructor to help you if necessary.

ANSWERS

ACTIVITY #4

Review Exercise - Matching

1. B
2. K
3. J
4. G
5. A
6. C
7. D
8. E
9. H
10. F
11. I

ANATOMY AND PHYSIOLOGY FOR HEALTH CARE WORKERS

Module B - Musculoskeletal System

unit 4

RATIONALE

Think in terms of building a car; in order to support the various parts, you must have a frame or something upon which to build. This same principle applies to the human body. If you were to build a human body, you would need a frame. The skeletal and muscular systems of the human body work together to form the body framework. In this module, you will learn how these systems are constructed and how they work together.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify four types of bones.
2. Identify one example for two of the four types of bones.
3. Identify three functions of bones.
4. Identify the structure of long bones.
5. Identify two types of muscles.
6. Identify three functions of muscles.
7. Identify two of the four types of joints, and one example for two of the four types.
8. Label twenty-one bones on a given diagram, using the medical term.
9. Label eight muscles on a given diagram, using the medical term.
10. Identify two of the three types of bone fractures.
11. Identify terms or diseases relating to the musculoskeletal system.

LEARNING ACTIVITIES

Directions: All the information you need for successful completion of this module is included in this section. The written activities are included to help you prepare for the Post Test and to help you learn the information presented. You will be instructed what to do as you proceed with the module. Always go to your instructor if you have any questions.

If a large diagram or model of the musculoskeletal system is available, it will help you as you are studying the material in this module.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Skeletal System

Directions: Read the following.

The skeletal system is the body's framework. It is covered on the outside by muscle and skin, and it forms the walls of the body cavities and the basis of the limbs. There are two hundred and six bones in the skeletal system. The prefix which means bone is osteo. You will find this used frequently in relation to various diseases of the bones.

The function of the skeletal system is to:

1. Provide support for the body.
2. Give shape to the body.
3. Provide protection for the internal organs.
4. Produce red blood cells.

Types of Bones

The organs of the skeletal system are the bones. There are four different types of bones.

1. Long bones which form the limbs and allow the body to move.
   Example: humerus, femur
2. Short bones which have no definite shape and collect together in groups.
   Example: tarsals, carpals
3. Irregular bones which resemble short bones.
   Example: vertebrae which form the spinal column
4. Flat bones which form the walls of cavities and protect their contents.
   Example: cranium, costals, pelvis

Locations of Bones

The spinal column consists of irregular bones called vertebrae. There are thirty-three of these with a hole in each which forms a canal or passageway for the spinal cord. If the spine is viewed from the side, it can be seen that it forms four curves. The diagram of the body cavities in Module A of this unit shows this curve. Turn back to Module A, page 4 (4.A.4) and look at the curve.

There are five regions in the spine.

1. Cervical vertebrae in the neck region contains seven bones.
2. Dorsal or thoracic vertebrae which forms the back and has the ribs attached to it contains twelve bones.

LEARNING ACTIVITIES - continued

3. Lumbar vertebrae is the largest region and has five bones.

4. Sacral vertebrae has five bones that grow together to form a triangle-shaped bone called the sacrum.

5. Coccyx vertebrae has the last four bones and is referred to as the tail region.

The cervical, thoracic, and lumbar vertebrae are flexible because they are separated by cartilage called intervertebral discs. These discs allow the body to bend and have freedom of movement; otherwise it would be stiff from the neck to the waist.

The skull or head consists of the cranium and the face. The flat bones which form the cranium give protection to the delicate brain. Of the fourteen facial bones, the mandible or lower jaw is the largest and is the only movable bone in the skull. Three tiny bones of the ear - the hammer, anvil, and stirrup - assist in the hearing function.

The pelvic girdle or innominate bones provide attachment for the bones and muscles of the legs. The pelvis is formed by the ileum, ischium, pubis, sacrum, and coccyx bones.

The arm consists of the upper arm or humerus and the lower arm is composed of the radius and ulna bones.

The hand has five metacarpal bones, and the five fingers have 14 bones called phalanges.

The upper leg contains the largest bone in the body, the femur or thigh bone. The lower leg consists of the tibia and fibula bones. The ankle or tarsus contains seven tarsal bones; the foot, five metatarsal bones; and the five toes on the foot contain 14 phalanges.

Many structures within the body get their names from the name of the closest bone. Remember, the femoral artery runs very close to the femur - the thigh bone. The radial artery that is used to take the pulse is found beside the radius - one of the lower arm bones. Knowing the names of the bones and their general location is important.

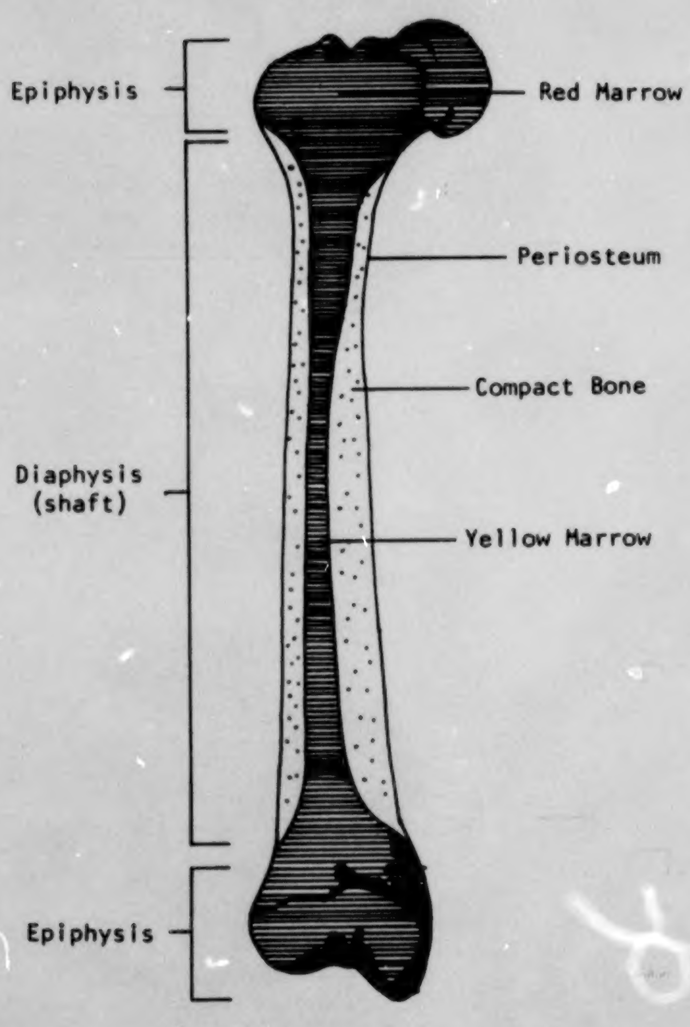
Bones are composed of microscopic cells which are hardened by the cell secretions. At birth, bones are soft but they gradually harden. All infants have a soft spot on the head called the fontanel; this hardens as growth progresses. Calcium and phosphorus are important dietary elements which furnish bone cells with materials needed to manufacture the bony secretion.

A typical long bone is composed of a shaft or diaphysis and two extremities called epiphysis. The yellow marrow of the bone, which contains fatty tissue, is found in the center of the shaft, and the hard or compact bone is found around the yellow marrow. Where the bone needs less strength, some of the hardened cells are dissolved, leaving spongy bone. The ends of the long bones contain the red marrow; it is here that red corpuscles and some white ones are manufactured. The outside of the bone is covered with the periosteum, which contains blood vessels, lymph vessels, and nerves. The bone needs the periosteum for growth, repair and nutrition. The periosteum is

LEARNING ACTIVITIES - continued

responsible for the life of the bone cells. Below is an illustration of the femur. Study this so you will know the elements which make up a long bone and the location of these composite parts.

FEMUR


Epiphysis
Red Marrow
Periosteum
Compact Bone
Diaphysis (shaft)
Yellow Marrow
Epiphysis

LEARNING ACTIVITIES - continued

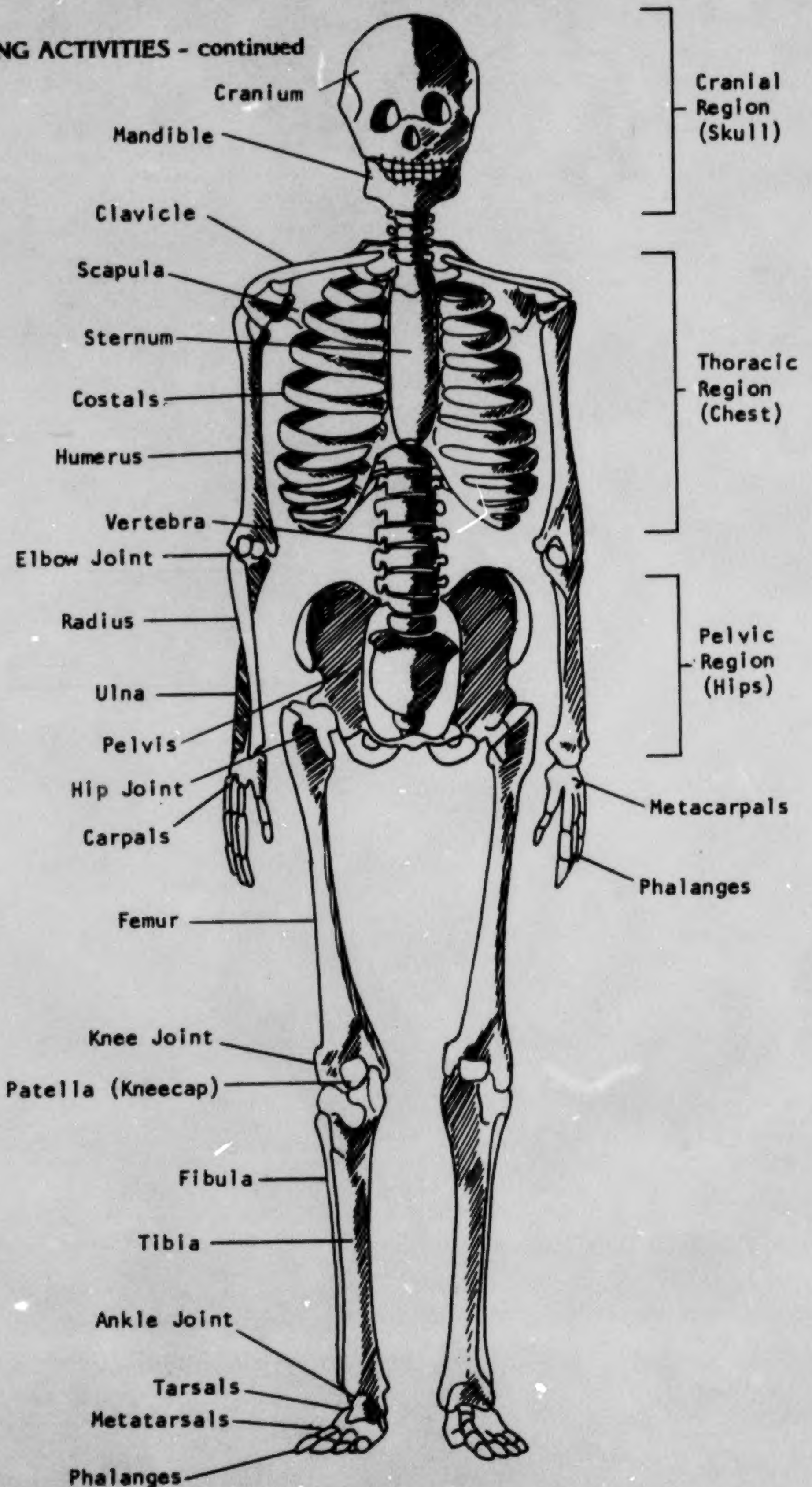
ACTIVITY #2. Skeletal System - Medical Terminology

Directions: Read the following material and memorize the medical terms for the bones of the skeletal system. Then study the diagram on the following page of this module to learn the location of these bones.

BONES OF THE SKELETAL SYSTEM

	BONE	MEDICAL TERM
1.	Collar bone	Clavicle
2.	Shoulder blade	Scapula
3.	Large bone - upper arm	Humerus
4.	Large bone - lower arm, thumb side	Radius
5.	Smaller bone - lower arm	Ulna
6.	Wrist bones	Carpals
7.	Bones in the hand	Metacarpals
8.	Bones in the fingers	Phalanges
9.	Large bone in the thigh of the leg	Femur
10.	Large bone in the lower leg	Tibia
11.	Small bone in the lower leg	Fibula
12.	Ankle bone	Tarsals
13.	Bones of the foot	Metatarsals
14.	Bones of the toes	Phalanges
15.	Kneecap	Patella
16.	Pelvic bones	Ileum
17.	Lower jaw, (only movable bone in the skull)	Mandible
18.	Chest cavity	Costals (ribs)
19.	Skull	Cranium
20.	Breastbone	Sternum
21.	Backbone	Vertebrae

LEARNING ACTIVITIES - continued


Cranium
Mandible
Clavicle
Scapula
Sternum
Costals
Humerus
Vertebra
Elbow Joint
Radius
Ulna
Pelvis
Hip Joint
Carpals
Femur
Knee Joint
Patella (Kneecap)
Fibula
Tibia
Ankle Joint
Tarsals
Metatarsals
Phalanges
Cranial Region (Skull)
Thoracic Region (Chest)
Pelvic Region (Hips)
Metacarpals
Phalanges

LEARNING ACTIVITIES - continued

Review Activity

Directions: If you are sure you have learned the names and locations of all the bones in the skeletal system, complete the following exercise. The answers to the questions can be found in the material you have studied in this module. If you have any difficulty or questions, ask your instructor to help you.

1. Give an example of each of the four different shapes of bones.

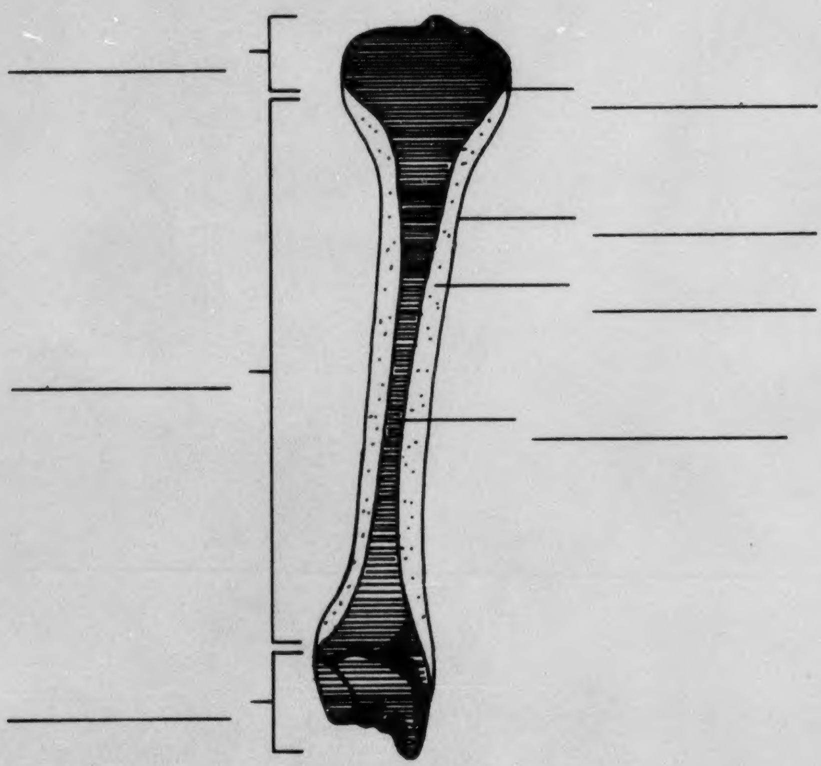
   a. Long ______________________________

   b. Short ______________________________

   c. Flat ______________________________

   d. Irregular ______________________________

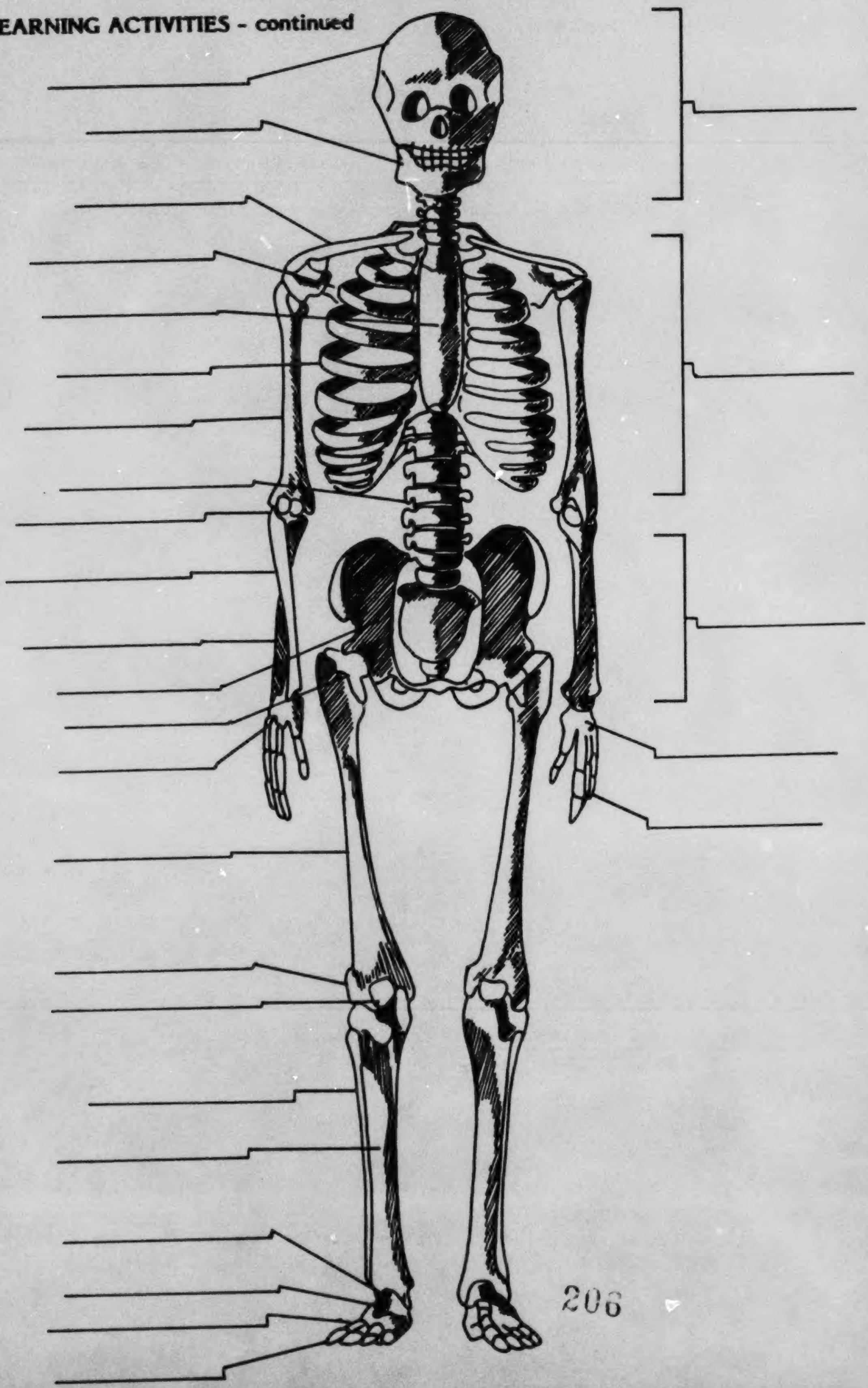
2. Label the parts of a long bone on the diagram below.



Review Activity

Directions: Label the following diagram of the skeletal system. You can check your answers with the diagram on page 6 of this module.

LEARNING ACTIVITIES - continued



LEARNING ACTIVITIES - continued

ACTIVITY #3. Bone Injuries and Diseases

Directions: Read the following.

The most common injury to a bone is a fracture or break. When this occurs, there is a swelling due to injury and bleeding from the broken ends of the bones. The process of replacing the fragments to their original position is known as reduction. A cast is put on to hold the fragments in place and at rest. Healing takes place and the bones knit and grow together again. The following chart will help you identify the common types of fractures.

COMMON TYPES OF FRACTURES

TYPE	DEFINITION
SIMPLE	Bone is broken, but there is no external wound. Skin has not been pierced.
COMPOUND	Bone is broken; external wound leads to site of the fracture - skin has been broken and bone may have pierced through the skin.
GREENSTICK	Bone is partly bent and partly broken as when a green stick breaks. Especially common in children's fractures.

Study the following information on diseases or conditions relating to bone injuries and diseases. You will need to know this for the Post Test on this module.

1. A dislocation occurs when a bone is displaced from its proper position in relation to a joint. The ligaments which bind bones to each other are torn and stretched. Reduction is also applied and rest is prescribed to allow the ligaments to heal.

2. Flat feet are caused by the stretching of the ligaments and muscles which keep the small bones of the foot in place. It is caused by standing with the weight on the wrong part of the foot for long periods of time. It is not easily cured.

3. Kyphosis (key-foe-sis) is a hunchback condition.

4. Lordosis (lor-doe-sis) is an exaggerated inward curvature in the lumbar region of the spine just above the sacrum.

5. Osteomyelitis is inflammation of the bone.

6. Osteoporosis is abnormal softness of the bones with complaints of low back pain, usually associated with ovarian deficiency, during and following the menopause. Vertebral collapse is not uncommon.

LEARNING ACTIVITIES - continued

7. Rickets is a disease of the bones which is due to lack of Vitamin D. Portions of the bones are soft, due to lack of calcification. The bones bend because they are soft. Bowlegs and pigeon breast are deformities due to rickets. This may be prevented by feeding a growing child sufficient quantities of Vitamin D, and by exposing the child to sunshine.

8. Scoliosis is a side-to-side curvature of the spine.

9. A sprain is an injury to a joint caused by any unusual strain, such as "turning the ankle." The ligaments are either torn from their attachments to the bones or torn across, but the joint is not dislocated. Treatment consists of supporting the joint until the ligaments heal. This is usually done by adhesive strapping.

10. Tuberculosis is a disease due to infection with tubercle bacillus micro-organism.

ACTIVITY #4. Joints (articulations)

Directions: Read the following.

Joints are points of possible movement. Several kinds of body movements are made possible because not all joints are formed in the same way. The elbow joint and knee joint work like a door hinge in that they move in only one direction. The arm-shoulder joint and thigh-pelvic joint are able to move in a complete circle like a ball and socket. The bones of the wrists and ankles and spinal column have a more limited, gliding type of motion. A pivot joint is where a bone rests on top of another bone, permitting free movement. Without movable joints, walking, bending, lifting, and sitting would be impossible.

Joints are held together by bands of fibrous tissue called ligaments. Ligaments do not prevent the joint from moving, but they do keep the bones of the joint in the proper relationship.

A joint or articulation is a point of contact between two bones. It may be movable or immovable. The hip joint and the shoulder joint are examples of movable joints. The membrane of a moving joint secretes a fluid called synovial fluid, which lubricates the joint. Another type of lubricating and cushioning device is the bursae or sacs which are found between the bones and muscles of the shoulder, elbow, hip, knee, and ankle joints. Some joints are immovable, such as those in the cranium where the bones have united to give the appearance of a seam or suture.

The prefix ortho means joint. You will see this prefix used frequently with diseases and conditions of the joints.

Types of freely movable joints are:

BALL AND SOCKET - Rounded end of bone fitting snugly within another bone.

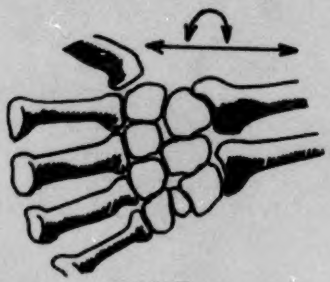
HINGE - Movement at joint in one direction, like a door.

LEARNING ACTIVITIES - continued

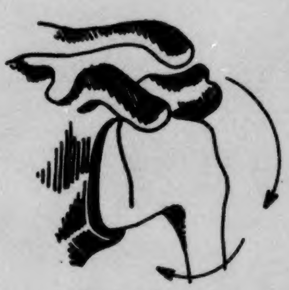
PIVOT	-	Bone resting atop another bone, permitting free movement.
GLIDING	-	Bones slipping over other bones with a free flowing movement.

Exercise - Joints

Directions: Answer the questions given under each of the illustrations. Answers can be found on the last page of this module.



WRIST



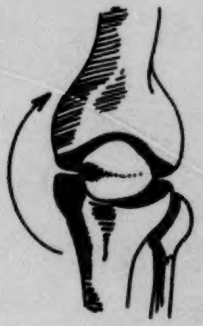
SHOULDER

1. What type of joint is the wrist?

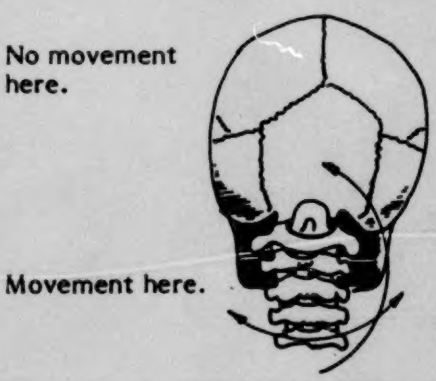
____

2. What kind of joint is the shoulder?

____



KNEE



SKULL ATOP VERTEBRA

3. What type of joint is the knee?

____

4. What kind of joint is this?

____

5. What type of joint movement do you find at the following:

a. Hip ______________________

b. Ankle ______________________

c. Elbow ______________________

d. Knuckles ______________________

LEARNING ACTIVITIES - continued

Additional Information

Directions: Read the following material carefully. You will need to know about these joint diseases when you are ready for the Post Test for this module.

Joint Diseases

1. Bursitis-Small sacs of fluid are found around joints; they help to reduce friction in the joint. They are called bursae. At times the bursae become inflamed and the joint becomes very painful. Treatment of bursitis includes application of heat to promote healing, and immobilization so that the joint cannot move. At times it is necessary to remove excess fluid from the joint by aspiration with a needle.

2. Arthritis is an inflammatory condition which affects the joints. The exact cause is unknown, but many factors are believed to contribute to the development of the disease. Various types of arthritis attack people of all ages, and crippling is common. Treatment is designed to reduce deformity, relieve pain, and provide supportive care. Specific exercises relieved by periods of rest are usually prescribed.

ACTIVITY #5. Review Exercise - The Human Skeleton

Directions: Complete the following exercise. You can find all of the answers in the material you have read in this module. If you have any problems or questions, ask your instructor to help you.

THE HUMAN SKELETON

1. The human skeleton contains more than 100 200 150 75 bones.
(Circle the correct number)

2. The human skull is made up of 22 bones. One of these is movable; it is the mandible or the ______________________________ .

3. The skull protects the ______________________________ .

4. Most of the ___________________ are fastened to the sternum or the ______________. These bones form the __________________ cage.

5. Some bones do not look like a "regular" bone but are flat. An example of this is the patella, which is the ______________________.

6. The human knee and elbow have joints that work like ____________________, so they are called ____________________ joints.

7. Shoulders and hips have joints that allow a rolling motion made possible by the use of ______________________ joints.

8. The spinal column is made up of 33 bones. Twenty-six of these are flexible bones called ______________________.

LEARNING ACTIVITIES - continued

9. If the backbone were one solid bone, describe how this would affect the movement of the body. ______________________________

____

ACTIVITY #6. Muscular System

Directions: Read the following.

There are more than 500 muscles in the body which work in groups. Voluntary muscles work as deliberate action and are willfully controlled. Skeletal muscles are attached to bones and can make our muscles contract and perform necessary movements. Other muscles called involuntary or visceral muscles operate without our conscious control. The involuntary muscles form the walls of the organs. If we had to direct muscles in our intestines to contract each time food was digested or direct our blood vessels to contract each time a slightly higher blood pressure was needed, there would be no time for any other activity. The control of these internal muscles is in an "automatic" center in the brain. The messages are sent to these muscles by special nerves.

Muscles have three functions.

1. They move the body or any of its parts.
2. They help keep the body erect and maintain good posture.
3. They produce most of the heat generated in the body.

Muscles derive their names from their location, shape, or action. The prefix myo means muscle. This prefix is used with terms referring to a type of muscle.

It is important to remember that muscles can only shorten or contract and lengthen or relax. Contraction occurs when nerves bring the message or stimulus to the muscle cells. Muscles relax when there is no stimulus.

As muscles contract, they shorten, pulling their points of origin and insertion closer together. Bending the forearm at the elbow takes place when the biceps muscle on the anterior arm, extending from the shoulder to below the elbow, contracts. At the same time, the triceps muscle, which is attached to the posterior shoulder and to the arm below the elbow, relaxes. To straighten the arm at the elbow, the triceps contracts while the biceps stretches (relaxes).

LEARNING ACTIVITIES - continued

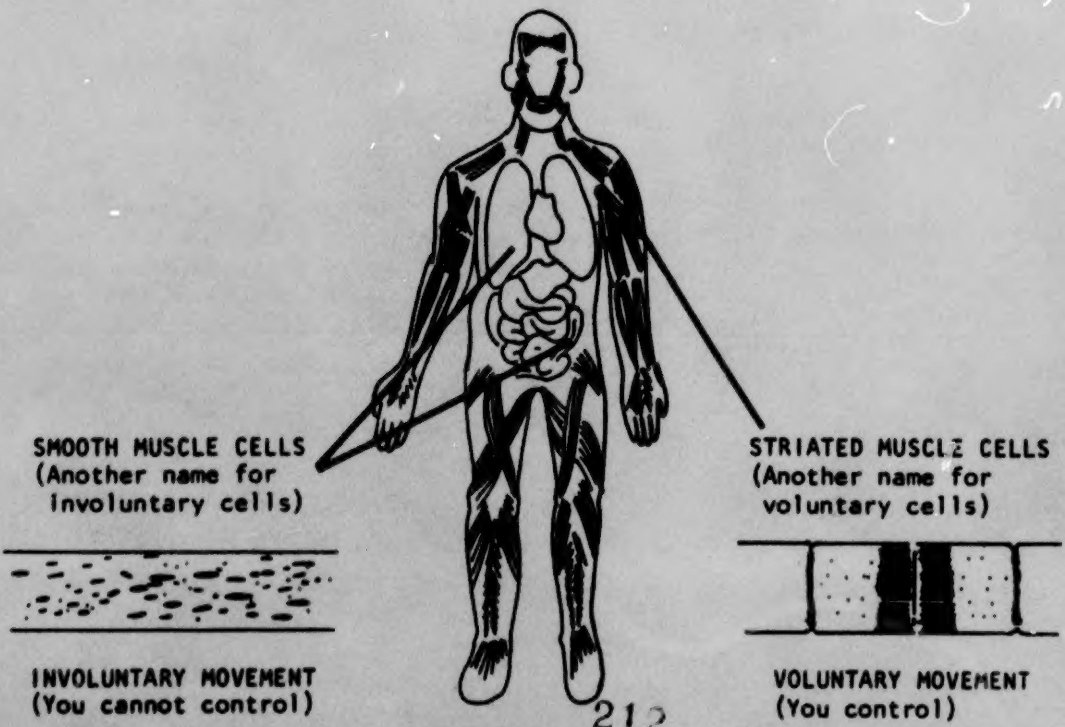
Muscle contractions are responsible for the following movements:

VOLUNTARY You can willfully control	INVOLUNTARY You cannot willfully control
1. facial expressions	1. blood vessels (veins)
2. chewing	2. stomach muscles
3. swallowing	3. heart action
4. movements of the head	
5. breathing	
6. movement of the hands and arms	
7. walking	

Tendons are white fibrous tissues which attach or connect muscles to bones. Remember that the ligaments attach bone to bone.

Study the following diagram of the muscular system.

MUSCULAR SYSTEM


SMOOTH MUSCLE CELLS
(Another name for
involuntary cells)
INVOLUNTARY MOVEMENT
(You cannot control)
STRIATED MUSCLE CELLS
(Another name for
voluntary cells)
VOLUNTARY MOVEMENT
(You control)

LEARNING ACTIVITIES - continued

Exercise

Directions: Complete the following exercise. Use the blank spaces to indicate the type of muscle action, voluntary, involuntary or both, involved in the activities listed. Answers can be found on the last page of this module.

1. Lifting ____________________
2. Digestion ____________________
3. Running ____________________
4. Blinking Eyes ____________________
5. Breathing ____________________
6. Heartbeat ____________________
7. Swallowing ____________________
8. Singing ____________________

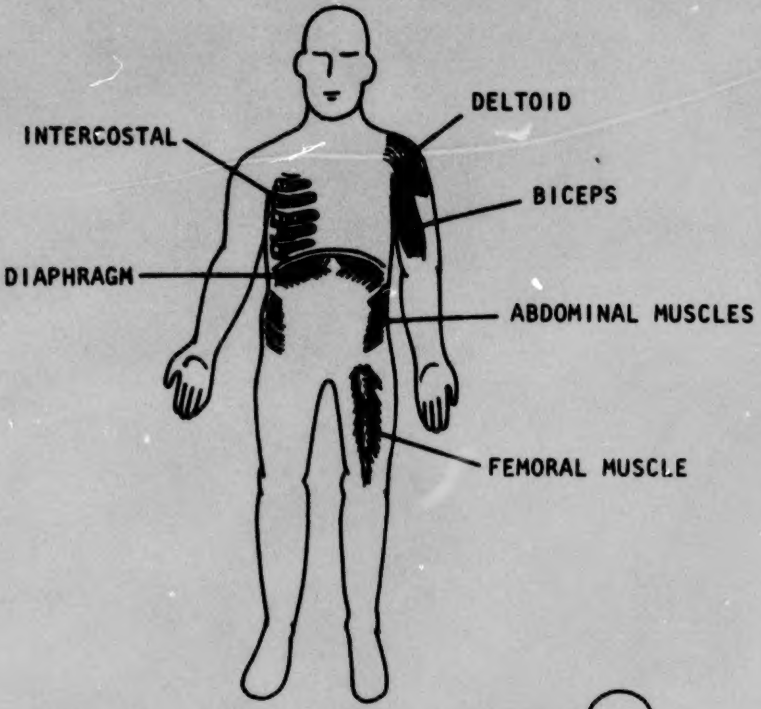
ACTIVITY #7. Muscular System Terminology

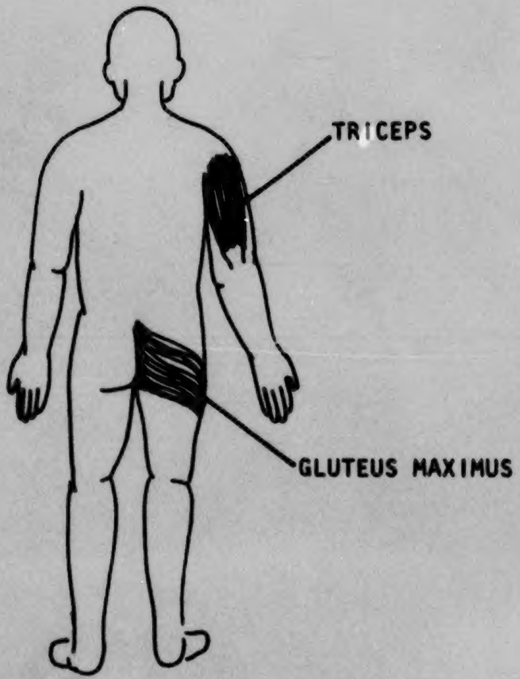
Directions: Study the following medical names and location of each of the following muscles and then locate these muscles on the diagram on the next page.

MUSCLE and LOCATION
(Medical Name)

1. DELTOID - Shoulder
2. BICEPS - Top of upper arm
3. TRICEPS - Bottom of upper arm
4. ABDOMINAL MUSCLE - Abdomen
5. FEMORAL MUSCLE - Top of thigh
6. GLUTEUS MAXIMUS - Buttocks
7. DIAPHRAGM - Between the thoracic and abdominal cavity, used for breathing
8. INTERCOSTAL - Between the ribs

MUSCULAR SYSTEM


DELTOID
INTERCOSTAL
BICEPS
DIAPHRAGM
ABDOMINAL MUSCLES
FEMORAL MUSCLE

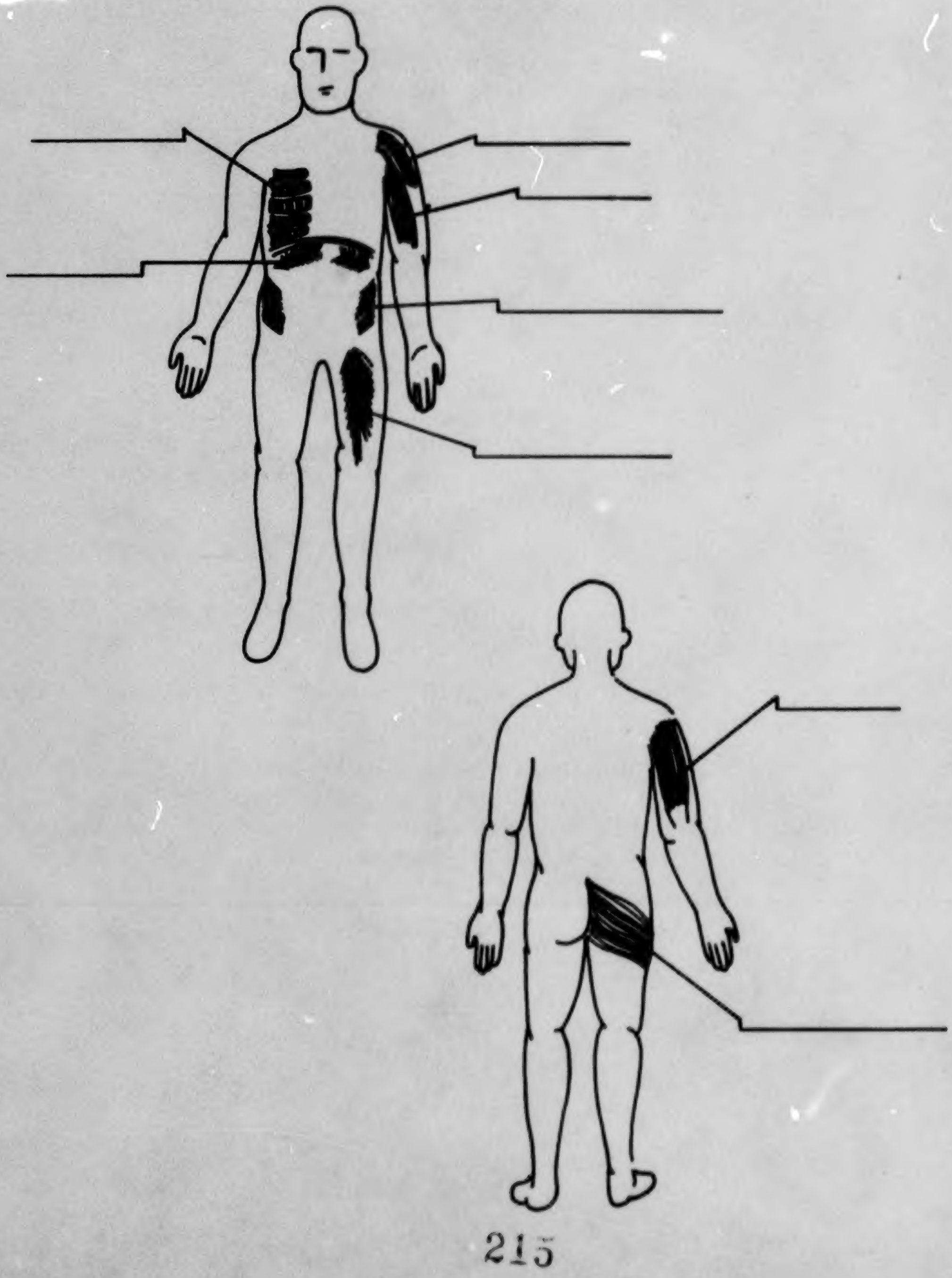

TRICEPS
GLUTEUS MAXIMUS

LEARNING ACTIVITIES - continued

Review Exercise

Directions: Label the following diagrams of the muscular system. The answers are included in the material you have studied in this activity.

MUSCULAR SYSTEM



LEARNING ACTIVITIES - continued

ACTIVITY #8. Special Terms of Movement

Directions: Read the following.

As a health care worker you must be familiar with special medical terms used to describe various movements of the body. These are terms you will hear, and see written, especially when you are caring for orthopedic patients and patients with long-term illnesses. You must know these terms when you take the Post Test for this module.

1. Flexion - decreasing the angle between two bones.
2. Extension - increasing the angle between two bones.
3. Rotation - circular motion in a ball-and-socket joint.
4. Abduction - moving away from midline.
5. Adduction - moving toward midline.

Muscle Injuries and Diseases

You should know about injuries and diseases which may develop in muscles. Retraining of injured or inactive muscles is called rehabilitation. Study the following information. It is necessary for you to know this to take the Post Test for this module.

1. Abdominal hernia or rupture - may occur in a weak place in the abdominal wall. It is caused by the intestine bulging through an opening in the wall of the abdominal cavity where it is normally contained. The inguinal hernia is the most frequent type of herina.
2. Atrophy - a condition in which the muscle shrinks up. This may be caused by paralysis of nerves to the area or lack of use of the muscle.
3. Contracture - loss of ability to flex or extend a muscle.
4. Flat Foot - a condition in which supporting muscles of the arch are unable to meet the strain placed upon them. Muscle strength should be increased by exercise, massage, and electrical stimulation.
5. Muscle Fatigue - may occur from overexercise or overuse of a muscle.

LEARNING ACTIVITIES - continued

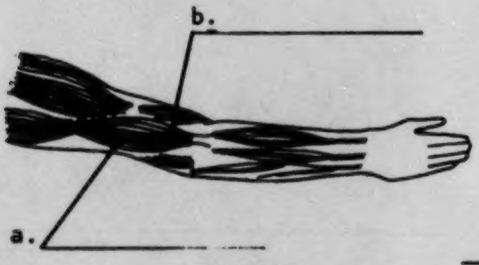
ACTIVITY #9. Terminology Exercise

Directions: Look up the definitions for the following terms. The meanings can be found in the information given in this module. You may need to know these terms for the Post Test for this module.

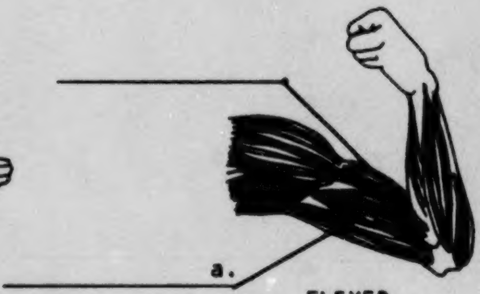
1. Articulations ______________________________
2. Coccyx Vertebrae ______________________________
3. Diaphysis ______________________________
4. Epiphysis ______________________________
5. Fracture ______________________________
6. Involuntary ______________________________
7. Ligament ______________________________
8. Periosteum ______________________________
9. Sacral Vertebrae ______________________________
10. Tendon ______________________________

ACTIVITY #10. How the Muscles Work

Directions: Complete the following exercise. Answers can be found on the last page of this module.



RELAXED



FLEXED

1. These drawings show the flexed arm and the relaxed arm. On each one, identify the biceps and the triceps muscles. (a.) is the ______________; (b.) is the ______________.
2. What makes the muscle "bulge" in the middle? ______________________
3. Does a muscle pull or push a bone? ______________________
4. Can a muscle do both? ______________________

LEARNING ACTIVITIES - continued

ACTIVITY #11. Exercise - Musculoskeletal System (Review)

Directions: Complete the following exercise as directed. The answers can be found in the material you have studied in this module. If you need help, ask your instructor.

1. The Skeletal System has several purposes. Name three.

   (a) ____________________

   (b) ____________________

   (c) ____________________

2. List three functions of the Muscular System.

   (a) ____________________

   (b) ____________________

   (c) ____________________

3. How many bones does the body contain? ____________________

4. Areas where bones are connected by ligaments are called ______________ .

5. List the two types of muscles.

   (a) ____________________

   (b) ____________________

CIRCLE THE CORRECT ANSWER.

6. Muscle tissue that you cannot control is:

   (a) voluntary (b) involuntary

7. Hinge, ball-and-socket, and pivot are all:

   (a) muscles (b) joints (c) tendons (d) ligaments

8. Mrs. Smith entered the hospital with a wasting away of muscle tissue. This is known as:

   (a) muscle atrophy (c) muscular dystrophy

   (b) muscle spasm (d) muscle contracture

LEARNING ACTIVITIES - concluded

9. Mr. Smith suffered a stroke and was admitted to the hospital. He needs to be turned frequently and positioned correctly to prevent a permanent shortening of his muscles. This is known as:

   (a) muscle spasm (b) muscle contracture (c) atrophy

10. John jumped from a high tree, landed on his foot and broke it. This is called:

    (a) food drop (b) arthritis (c) fracture

11. Inflammation of the joints is referred to as:

    (a) myelitis (b) arthritis (c) dislocation

12. Many football players suffer kneecap injuries and tear the ligaments. The kneecap is called:

    (a) tibia (b) fibula (c) scapula (d) patella

FILL IN THE BLANKS.

13. When stimulated by nerves, muscles will ____________________ causing bones to move.

14. Joints are held together by bands of fibrous tissue called ____________________ __________.

ANSWERS

ACTIVITY #4

1. Gliding

2. Ball and socket

3. Hinge

4. Pivot

5a. Ball and socket
 b. Gliding
 c. Hinge
 d. Hinge

ACTIVITY #6

1. Voluntary

2. Involuntary

3. Voluntary

4. Voluntary and involuntary

5. Involuntary and voluntary

6. Involuntary

7. Voluntary and involuntary

8. Voluntary

ACTIVITY #10

1. (a.) Triceps
   (b.) Biceps

2. Muscle contraction

3. Pull

4. No

ANATOMY AND PHYSIOLOGY FOR HEALTH CARE WORKERS

Module C - Integumentary System

RATIONALE

An intact integumentary system is called skin and is extremely important in effectively protecting yourself and your patient from injury and infection. If your skin is not well taken care of and cleansed properly, your body loses its first line of defense, not to mention that a readily noticeable, unpleasant odor may result.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify two of five functions of the skin.
2. Locate and name eight major parts of the integumentary system on a given diagram.
3. Identify one function of each of four of the eight major parts.
4. Identify terms and conditions relating to the integumentary system.
5. Identify characteristics of the integumentary system.

LEARNING ACTIVITIES

Directions: All the information you need for successful completion of this module is given in the learning activities. The written activities are included to help you prepare for the Post Test and to help you learn the information presented. You will be instructed what to do as you progress with the module. Always go to your instructor if you have any questions.

If there is a diagram of the skin available in the lab, study it. It will help you learn the material given in this module.

ACTIVITY #1. The Integumentary System

Directions: Read the following.

Skin

The skin is one of the most important organs of the body. The integumentary system includes the skin and its accessory structures: (1) the hair; (2) nails; (3) nerves; (4) sweat glands; (5) oil - sebaceous - glands.

The skin tells us much about the general health of the body. A fever may be indicated by a hot, dry skin. Unusual redness - rubor - or flushing is a sign associated with many conditions. When oxygen content is very low in the blood, the skin appears bluish - cyanotic.

LEARNING ACTIVITIES - continued

Five Important Functions of Skin

1. Protection

   The intact skin is a mechanical barrier to injury or disease.

2. Heat Regulation

   Many small blood vessels.are present in the deeper part of the skin - the dermis. When these vessels dilate with blood, heat is brought to the surface where it escapes from the body. When heat needs to be conserved, these vessels constrict, thereby preserving heat within the body.

3. Storage

   Energy and some vitamins are stored in the subcutaneous tissue beneath the skin.

4. Elimination

   Some waste products and excess water are cast off - excreted as perspiration - through the activity of the sweat glands.

5. Sensory Perception

   Nerve endings that respond to heat, cold, pain and pressure are found in the skin. This is called our sense of touch - tactile sense.

ACTIVITY #2. Major Parts of the Integumentary System

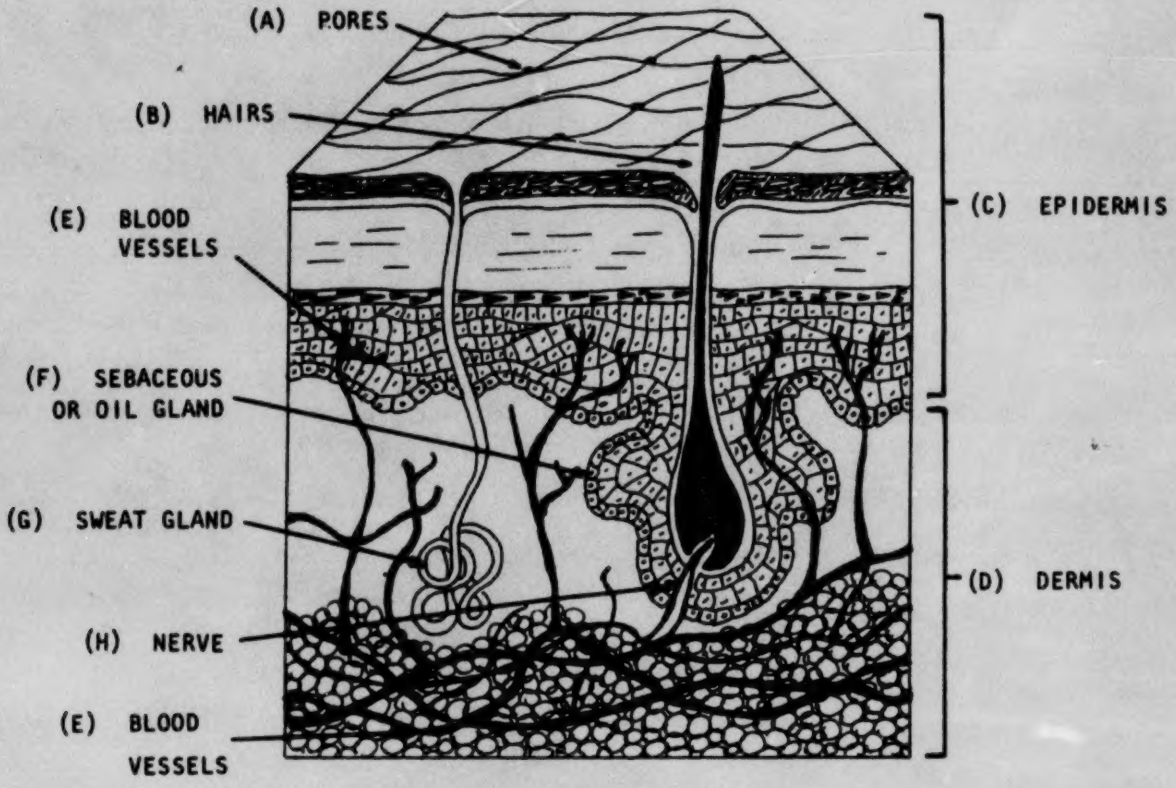
Directions: Read the following.

There are nine major parts of the integumentary system. Eight of them can be located on the diagram on the following page of this module. The nails of the fingers and toes make up the ninth part and will be discussed later in this activity.

LEARNING ACTIVITIES - continued

The Major Parts of the Integumentary System

Use the following illustration to study the location of the eight major parts of the integumentary system. Find the word integumentary in the dictionary and learn how to spell and pronounce it correctly.


(A) PORES
(B) HAIRS
(E) BLOOD VESSELS
(F) SEBACEOUS OR OIL GLAND
(G) SWEAT GLAND
(H) NERVE
(E) BLOOD VESSELS
(C) EPIDERMIS
(D) DERMIS

Each part of the system will be explained on the following pages of this module.

Pores

Pores are the minute openings of the sweat glands and are apparent as ducts on the surface of the skin. Their function is to allow sweat and waste to leave the body.

Hair

Hair covers the entire body with the exception of the palms of the hands and the soles of the feet. The functions of hair are:

1. To filter - the hair of the eyelids, nose, and ears screens out dust, insects and other foreign matter.

2. To provide warmth
3. To beautify

The hair root is embedded in the dermis. The shaft is the part of the hair that is visible. Hair grows in the follicle. Pigmentation or melanin in the shaft creates hair color. Soft, almost invisible hair is found on the forehead. The hair of the scalp is long, while short, stiff hair is found on the eyelids. The hair on the pubic area is coarser and kinky.

A small bundle of involuntary muscle is attached to each hair follicle. Under the influence of cold, or emotions such as "fright", these muscles contract causing the hair "to stand on end". This is commonly known as "goose flesh".

Epidermis - The Outer Layer of Skin

The function of the outer layer is to protect the body. The epidermis contains the pigment or melanin which is the basic coloring matter found in the deeper layers of epidermis and is permanent. Melanin prevents the dangerous rays of the sun from damaging the more sensitive body tissues. A freckle is a small brownish local pigmentation on the skin surface. Overexposure to the sun increases the production of melanin and may cause sunburn.

The epidermis is made up of several layers of practically dead "horny cells". These cells flake off or soak off when they are wet. Cells from deeper layers of the epidermis constantly push upward and replace the dead cells.

Dermis - The True Skin

The dermis is the inner layer of skin just below the epidermis. The dermis contains:

1. Blood vessels
2. Nerves
3. Hair follicles
4. Sweat glands
5. Oil glands

The skin is soft and flexible due to elastic fibers in the dermis. Younger persons have more "elastic" skin. Loss of elasticity is a sign of aging.

Cholesterol in the skin can be changed to Vitamin "D" by the ultraviolet light from sunshine. Vitamin "D" is called the sunshine vitamin.

LEARNING ACTIVITIES - continued

Blood Vessels

The pinkish characteristic of the skin comes from blood vessels in the dermis. When blood vessels constrict, get smaller, the amount of heat loss via the skin is reduced. A change in the volume of blood flowing through the capillaries affects skin color. An increased amount of blood gives a pinkish color; a decreased amount of blood gives a pale color. A bluish cast or tint to the skin is called cyanosis and is caused by unoxygenated hemoglobin.

Sebaceous Glands

These glands are also called oil glands. They are located around the shaft of the hair and secrete oil which softens the hair and skin.

Each hair is kept soft and pliable by two or more sebaceous or oil glands. These glands prevent excessive water evaporation from the skin, excessive water absorption by the skin, and waterproof the skin and lessen the amount of heat loss.

Sudoriferous

Sweat glands are located all over the body, especially on the palms of the hands, soles of the feet, forehead and axilla. They are tightly coiled tubes in the dermis with corkscrew-like tubules which rise through the epidermis to the surface of the skin. The sweat glands help regulate heat, excrete salts and urea, balance fluids, and cool the body. Each functions like a tiny kidney.

The skin provides a channel of excretion by discharging waste matter through the sweat glands in the skin. This process, called perspiration, is an important factor in regulating body temperature. Diaphoresis is a term which means profuse perspiration or sweating. The sweat glands, under the control of the nervous system, are activated by several factors: a hot outside temperature, pain, fever, and nervousness.

The amount of water lost through the pores in the skin is almost one pint a day; however, this may vary according to the type of exercise and the outside temperature. In profuse sweating, a great deal of sodium chloride salt may be lost. It is vital to replace this because a loss of salt often causes a person to become dehydrated and faint. People who work outdoors all summer in intense heat often take salt tablets to keep a proper salt balance in their body. Because of its constant exposure, the skin is subject to many disorders.

Nerves

Nerve endings, scattered throughout every part of the skin, receive stimuli and send impulses to the spinal cord and brain.

Nerve impulses transmit sensations of:

1. Pressure
2. Pain
3. Heat
4. Cold
5. Touch

LEARNING ACTIVITIES - continued

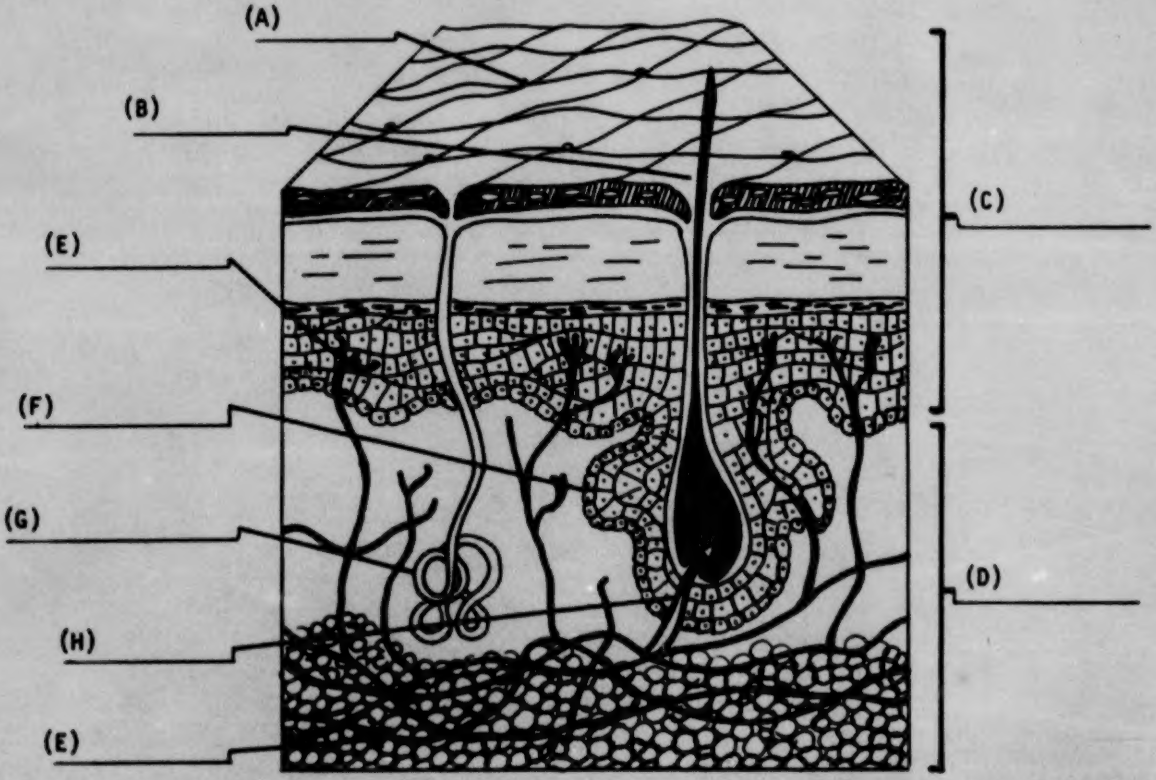
Nails

Nails are the growth of skin tissue that protrudes from the tips of the fingers and toes. Clear, horny cells of the epidermis join together to form a solid, continuous, thick, hard plate. Their function is to aid in manual dexterity, scratching, and release of tension. Sometimes people relieve tension by biting their nails.

Review the nine major parts of the integumentary system and study the diagram on page 4.C.3. Before continuing with this module, be sure you can name at least one function of each major part of the integumentary system.

Review Exercise

Directions: On the diagram below, label the eight parts of the Integumentary System. Check your answers with the diagram on page 4.C.3 of this module.



LEARNING ACTIVITIES - continued

ACTIVITY #3. Skin Conditions

Directions: Read the following. You will need to know about skin conditions when you take the Post Test.

Injury or disease causes changes in areas of the skin. These changes are called lesions. Some of the most common skin lesions are:

Macules:	Flat, discolored spots as in measles.
Papules:	Small, solid, raised spots as in chickenpox.
Pustules:	Raised spots filled with pus as in acne.
Vesicles:	Raised spots filled with serous fluid such as a blister.
Wheals:	Large, raised, irregular areas frequently associated with itching.
Excoriations:	Portions of the skin appear scraped or scratched away.
Crusts:	Areas of dried body secretions such as scabs.
Boils:	Inflammation of a hair follicle.

Disorders of the Skin

Acne vulgaris:	A chronic skin disorder of adolescence marked by pimples, cysts, blackheads, and scarring.
Athlete's foot:	A contagious fungus infection of the feet, usually contracted in public baths and/or showers.

Burns: Tissue injury resulting from excessive exposure to thermal, chemical, electrical or radioactive agents. The effects vary and burns are usually classified as:

1. First Degree Burns - Superficial burns - damage being limited to the outer layer of the epidermis.
2. Second Degree Burns - Burns in which damage extends through the epidermis and into the dermis but not of sufficient extent to interfere with regeneration of the epidermis.
3. Third Degree Burns - Burns in which both epidermis and dermis are destroyed with damage extending into underlying tissues.

Eczema:	An allergic condition caused by diet, clothing, creams, soaps, etc. Skin becomes dry, itchy, and scaly.
Gangrene:	Death of the tissue cells caused by interference with the blood supply to the area.

LEARNING ACTIVITIES - continued

Cleansing the Skin

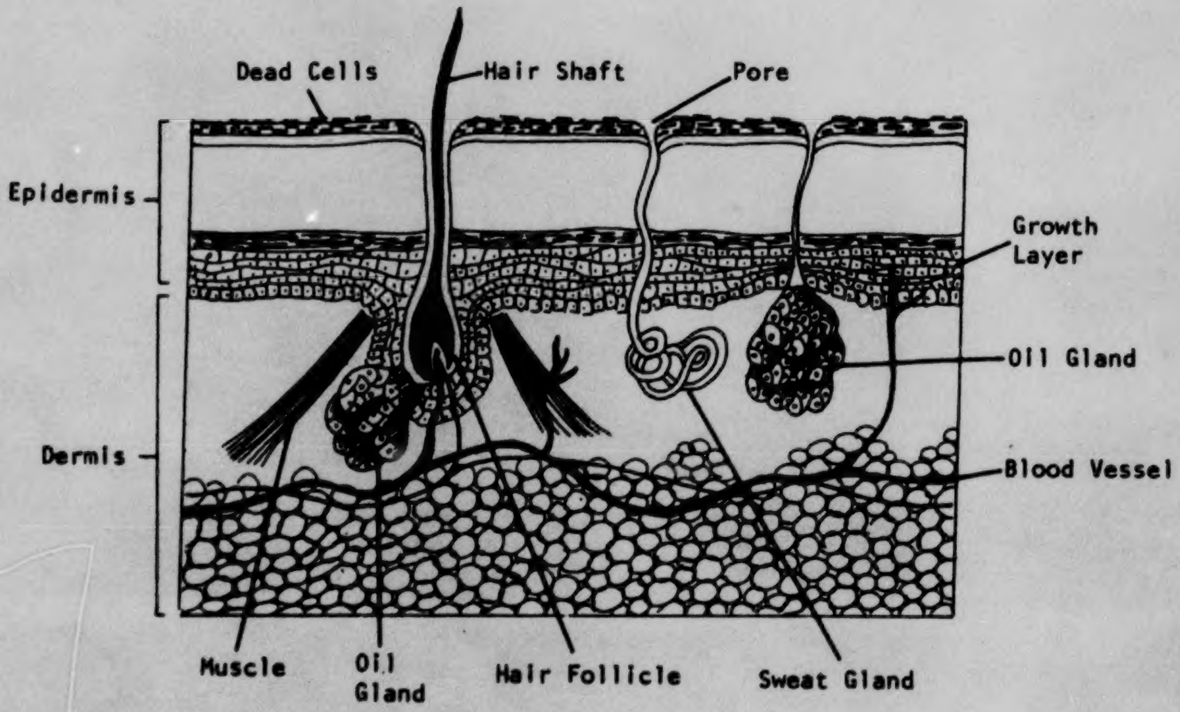
Because some parts of the skin are exposed at all times, bacteria, germs, are always present. Skin is a natural, mechanical barrier which prevents bacteria from entering the body and causing disease. It has pores, openings from the sweat and oil glands, which secrete substances that collect on the epidermis. Remember, the skin continually sheds dead cells which are replaced by new cells from the growth layer. An accumulation of bacteria, dead cells, oil, and dried sweat will cause an unpleasant odor. One reason for washing the skin is to remove this accumulation. To avoid odors, the areas of greater concentration of sweat glands need to be washed more frequently. When cleansing the skin, some friction, rubbing, must be employed to dislodge the layer of dead cells and bacteria. An agent that will cut and remove the oil and dried perspiration must be used; soap is a good agent for this purpose. It is important to remember that soap, if allowed to dry on the skin, is irritating and therefore must be thoroughly rinsed off. Some of the principles involved in maintaining skin cleanliness are the use of soap, friction, and thorough rinsing.

ACTIVITY #4. Skin Diagram

Directions: This diagram of the skin shows the detail of various parts. Study it carefully. It will give you a clearer understanding of the parts and their locations.

SKIN

(Integumentary System)



LEARNING ACTIVITIES - continued

Review Exercise

Directions: Identify the following. You can check your answers with those given on the last page of this module.

1. Pain receptor ______________________________
2. Carries oxygen to skin ______________________________
3. Helps cool body ______________________________
4. Keeps skin soft ______________________________
5. Causes movement of hair and skin ______________________________
6. We let it grow, curl it, or cut it ______________________________
7. Upper skin layer ______________________________
8. Inner skin layer ______________________________

ACTIVITY #5. Review Exercise on the Integumentary System

Directions: In the following exercise, indicate whether the statements are TRUE or FALSE by circling either the T or F following each statement. The answers to this exercise will be found on the last page of this module.

1. Protection is an important function of the skin. T F
2. The skin is able to preserve heat, within the body, by dilating small vessels found in the skin. T F
3. The dermis is the outer layer of the skin. T F
4. A first-degree burn affects only the epidermis. T F
5. The epidermis is the outer layer of the skin. T F
6. Lesions are changes in the areas of the skin caused by disease or injury. T F
7. Perspiration occurs through the activity of the sweat glands. T F
8. A third-degree burn destroys both layers of the skin as well as the underlying tissues. T F
9. Cyanosis is when the skin turns a yellowish color. T F
10. The skin normally responds to heat, cold, pain, and touch. T F

LEARNING ACTIVITIES - continued

11. A sebaceous gland is the same as an oil gland. T F

12. Acne is a skin condition. T F

Review Exercise

Directions: Answer the following questions. The answers can be found in the material you have read in this module. Ask your instructor if you need help.

The Skin

1. Name one function of body hairs. ______________________________

____

2. The skin is made up of two layers: a. ____________ b. ____________ .

3. The true skin is the ______________________________ .

4. By what means does the body cool itself? ______________________

____

____

5. Describe how the body conserves heat. ______________________

____

____

6. Describe the cause of "goose flesh". ______________________

____

____

7. List five functions of the skin.

a. ____

b. ____

c. ____

d. ____

e. ____

LEARNING ACTIVITIES - concluded

8. What is melanin? ______________________

9. Where is melanin found? ______________________

10. What is cyanosis? ______________________

11. List four accessory organs to the skin.

    a. ______________________

    b. ______________________

    c. ______________________

    d. ______________________

12. Hair grows in the hair ______________________ .

13. What is the hair shaft? ______________________

14. Sebaceous glands secrete ______________________ .

15. The sebaceous glands are located in the ______________________ .

16. The structure that waterproofs the skin is the ______________________ .

17. What vitamin is called the "sunshine vitamin"? ______________________

18. Name the senses involved in the system you have studied in this module.

    a. ______________________

    b. ______________________

    c. ______________________

    d. ______________________

19. The part of the skin that we see and wash daily is ______________________ .

20. The ______________________ System covers the body.

ANSWERS

ACTIVITY #4

1. nerve
2. blood vessel
3. sweat gland
4. oil gland
5. muscle
6. hair
7. epidermis
8. dermis

ACTIVITY #5

1. T
2. F
3. F
4. T
5. T
6. T
7. T
8. T
9. F
10. T
11. T
12. T

ANATOMY AND PHYSIOLOGY FOR HEALTH CARE WORKERS

Module D - Digestive System

RATIONALE

It is important that you understand how food is used by the body. The process by which the body uses food is called digestion, and the body system is called the Digestive System or the Gastrointestinal System (GI). When you know what happens to food in the body, you will understand your patients' need for food and water, and you will understand what happens in the digestive process during illness.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify the process for the digestion of food.
2. Label the seven major organs of the digestive system on a given diagram.
3. Identify one function for four of the seven major organs.
4. Identify two of the six accessory organs of the digestive system and identify one function for three of them.
5. Identify conditions and diseases relating to the digestive system.
6. Identify terms used to describe the various parts of the digestive system.

LEARNING ACTIVITIES

Directions: All the information you will need for successful completion of this module is included in the learning activities. The written activities are included to help you prepare for the Post Test and learn the information presented. You will be instructed what to do as you progress with the module. Always go to your instructor if you have any questions.

If there is a large diagram or model of the digestive system available in the lab, use it to help you study and understand the digestive system.

ACTIVITY #1. The Process of Digestion

Directions: Read the following.

The gastrointestinal system is also called the GI or digestive tract. It extends from the mouth to the anus and is lined with mucous membrane. The organs of this system change food into simple form to facilitate its passage through the small intestine into the circulatory system. The circulatory system carries the nutrients to the body cells.

LEARNING ACTIVITIES - continued

All the food we eat must be prepared within the body for final use by the cells. This means that certain physical and chemical changes must take place to change the food into liquid form which can be transported by the blood to all cells and be absorbed by them. The process of changing solid food to liquid form is called digestion. The organs which perform this change make up the digestive system, and consist of the alimentary canal and accessory organs. The alimentary canal includes the mouth, pharynx, esophagus, stomach, small intestine, large intestine, and the rectum. It is a canal thirty to forty feet long through which food passes during digestion. The accessory or helping organs are the teeth, tongue, salivary glands, pancreas, liver and gallbladder.

The Mouth

Food is chewed by the teeth so that it can be swallowed and digested easily. Together, the teeth and tongue mix the food with saliva. Several quarts of liquid saliva are produced daily by the salivary glands. During a life-time, the body produces two sets of teeth. There are twenty teeth in the first set which begin to appear when an infant is about six months of age. These baby teeth are gradually replaced by thirty-two permanent adult teeth.

The tongue lies on the floor of the mouth within the curve of the lower jaw, the mandible. The tongue is the principal organ of taste and assists in chewing and swallowing food. On the surface of the tongue are projections called papillae. Some of these papillae contain taste buds which respond to food flavors. A few taste buds are also found in other areas of the mucous membrane that lines the mouth cavity.

The salivary glands are located in three places. The parotid glands are found on each side of the face below the ear. Other salivary glands are located beneath the tongue on the floor of the mouth and beneath the mucous membrane that lines the inside of the cheeks. The salivary glands respond to the taste buds and increase the secretion of saliva when food is eaten.

The Stomach

After food has been chewed and swallowed, it passes through the pharynx and esophagus to the stomach. The stomach is a hollow, muscular organ where food is mixed with and acted upon by gastric, stomach, juices. Food is held within the stomach by muscles at either end while it is mixed with the digestive juices. One of the digestive juices produced by the stomach is hydrochloric acid.

Chemical changes are helped by the churning action of the stomach walls. The semi-liquid food which results is called chyme. When the chyme is ready to leave the stomach, the lower end of the stomach called the pylorus opens from time to time and allows the food to spurt into the small intestine. The word pylorus comes from a Greek word meaning "gatekeeper" which describes the action of this muscle very well.

The Intestines

The small intestine is about 20 feet long and coils within the peritoneum. It has three main portions: the duodenum, the jejunum, and the ileum. The duodenum is

LEARNING ACTIVITIES - continued

about 12 inches long and has an opening in the back to receive the bile and pancreatic enzymes. Materials are moved through the intestines by waves of rhythmic contractions of the involuntary muscles in the intestinal wall. These rhythmic contractions are called peristalsis. The small intestine contains thousands of tiny glands called intestinal glands which produce intestinal juice. In addition to intestinal juice, bile from the liver and pancreatic juice from the pancreas are poured into the small intestine. Thus, there are really three digestive juices functioning in the small intestine to complete the digestion of food. Most of the nutrients and food the body needs are absorbed into the bloodstream through the walls of the small intestine. This absorption is made possible by millions of tiny projections called villi which line the walls of the small intestine. The usable portion of the food passes through the villi into the bloodstream and on to all the body cells. The unusable portion passes into the large intestine.

The small intestine is separated from the large intestine which is also known as the colon. Names have been given to different portions of the large intestine: cecum; ascending colon; transverse colon; descending colon; sigmoid colon; rectum; and anus. Water is absorbed through the walls of the large intestine, changing wastes to a more solid form. In this way the large intestine helps to maintain the water balance of the body. Peristalsis moves waste through the large intestine until it reaches the rectum. When a certain amount of waste has been collected in the rectum, it is eliminated as feces through the anus.

Projecting from the cecum portion of the large intestine is a small, blind gut called the veriform appendix. Its function is unclear. When it becomes infected, surgery - called an appendectomy - is required.

The Liver and Gallbladder

The liver is the largest gland in the body. It is located just beneath the right side of the diaphragm. The liver has many functions. It changes and stores proteins and sugar in the blood. It produces two proteins, prothrombin and fibrinogen, necessary for blood clotting. It manufactures bile used for digestion of fats and to color the feces. This bile is stored in the gallbladder, a small sac-like organ located on the underside of the liver. When needed for digestion, the bile is sent to the duodenum. Sometimes the bile is prevented from reaching the small intestine; it is usually because the salts within the bile have been stored too long and have crystallized and formed gallstones. These stones may lodge either in the gallbladder or the ducts through which the bile passes. Surgery may be necessary for their removal.

The Pancreas

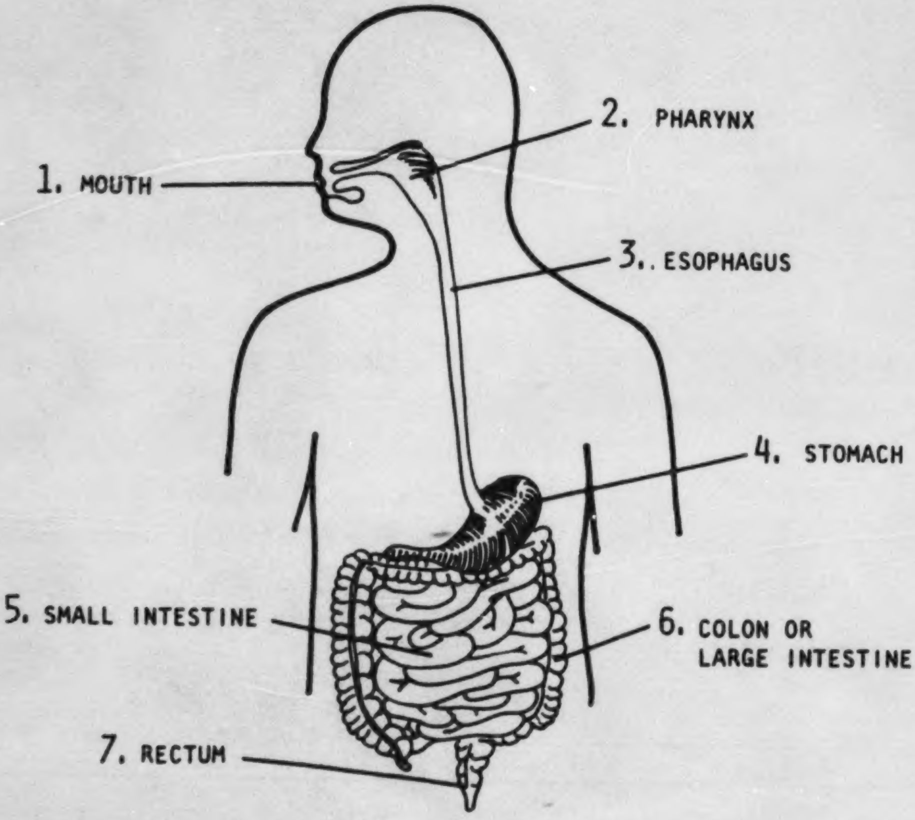
The pancreas is a glandular organ which extends from behind the stomach into the curve of the duodenum. It manufactures pancreatic juice which is sent into the duodenum to aid in the digestion of food. The pancreas also has special cells which produce insulin.

LEARNING ACTIVITIES - continued

The Major Organs of the Digestive System

Directions: Study the following diagram and note the location of the seven major organs of the digestive system. Read the name of each organ, say it to yourself, and study the spelling.

MAJOR ORGANS OF THE DIGESTIVE SYSTEM

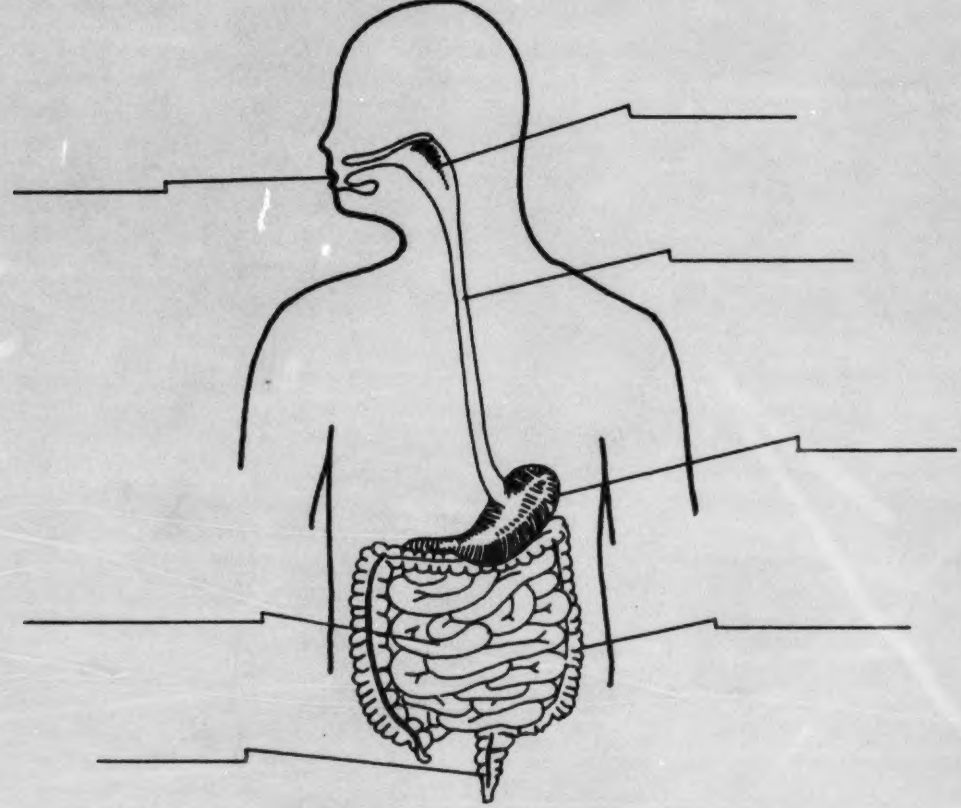

1. MOUTH
2. PHARYNX
3.. ESOPHAGUS
4. STOMACH
5. SMALL INTESTINE
6. COLON OR LARGE INTESTINE
7. RECTUM

LEARNING ACTIVITIES - continued

Directions: On the diagram on this page, label the seven major organs of the digestive system, using the following words:

LARGE INTESTINE, SMALL INTESTINE, STOMACH, RECTUM, PHARYNX, MOUTH, ESOPHAGUS

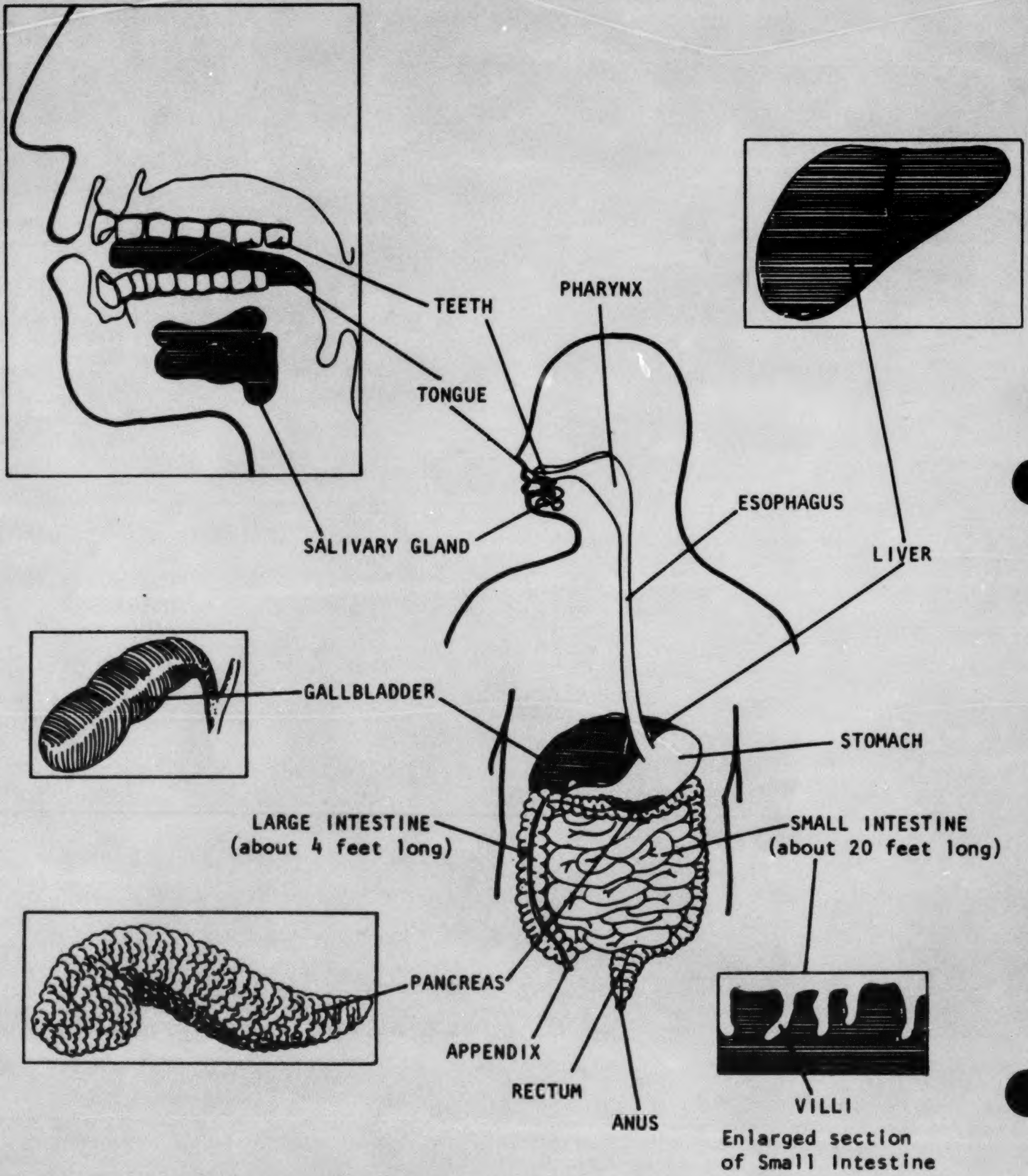
Use the diagram on the preceding page of this module (4.D.4) to check your answers.



LEARNING ACTIVITIES - continued

ACTIVITY #2. Major Organs and Accessory Organs

Directions: Study this diagram; then answer the questions on the following page.


TEETH
PHARYNX
TONGUE
SALIVARY GLAND
ESOPHAGUS
LIVER
GALLBLADDER
STOMACH
LARGE INTESTINE
(about 4 feet long)
SMALL INTESTINE
(about 20 feet long)
PANCREAS
APPENDIX
RECTUM
ANUS
VILLI
Enlarged section
of Small Intestine

LEARNING ACTIVITIES - continued

1. In correct order, give the sequence in which food passes through the digestive tract.

   a. ______________________ e. ______________________

   b. ______________________ f. ______________________

   c. ______________________ g. ______________________

   d. ______________________ h. ______________________

2. Name the two glands that send juices into the small intestine near the stomach.

   a. ______________________ b. ______________________

3. Name the finger-like projections in the small intestine. ______________________

4. Describe the function of those projections.

   ____

   ____

   ____

5. Name the portion of the large intestine where the appendix is located.

   ____

6. Name the accessory organs of the digestive system.

   a. ______________ c. ______________ e. ______________

   b. ______________ d. ______________ f. ______________

Answers to the above can be found on the last page of this module.

Review Exercise - Major Organs and Accessory Organs

Directions: Fill in the blanks.

1. Saliva is mixed with food in the ______________________ .
2. Taste buds are contained in the ______________________ .
3. The area that leads from the mouth to the esophagus is the ______________ .
4. The tube leading to the stomach is the ______________________ .
5. Most of the water is absorbed in the ______________________ .

LEARNING ACTIVITIES - continued

6. A pouch which stores and further digests food is the ____________________ .
7. Most nutrients or food is absorbed in the ____________________ .
8. Stool is stored for elimination in the ____________________ .

Directions: Match the following.

1.	______	peristalsis	A.	secretes bile
2.	______	appendix	B.	secretes special digestive juices
3.	______	liver	C.	wave-like muscle movements which move food through the intestines
4.	______	gallbladder	D.	a sac which stores bile
5.	______	bile	E.	a thick, greenish liquid
6.	______	pancreas	F.	a small finger-like tube

You can find the answers for this exercise in the material you have studied in this module. If you need help, see your instructor.

ACTIVITY #3. Common Diseases and Conditions of the Digestive System

Directions: Study the following terms relating to diseases and conditions of the digestive system. You will need to know about these when you complete the Post Test for this module.

1. Appendicitis - Inflammation of the appendix; often results in removal by surgery.
2. Cholecystitis - Inflammation of the gallbladder.
3. Chronic Constipation - Chronic constipation may result from faulty diet and poor health habits. Headaches, pimples, abdominal cramps, and sluggishness can be caused by constipation. Treatment includes establishment of correct diet, good health habits, freedom from tension, exercise, and adequate intake of liquids.
4. Colitis - Inflammation of the colon accompanied by large quantities of mucous in the stool.
5. Diarrhea - Diarrhea, frequent liquid bowel movement, is the opposite of constipation and may be a symptom of cancer, nervous disorders, or intestinal infection. The patient should be given only sips of water and plain hot tea until seen by the doctor, who will determine the cause and prescribe treatment.
6. Enteritis - Inflammation of the intestines.

LEARNING ACTIVITIES - continued

7. Gallstones - Gallstones are collections of stones which form in the gallbladder or in the liver. Pain and digestive disturbances may occur. Surgery may be necessary.

8. Gastritis - Gastritis is an inflammation of the lining of the stomach caused by an irritant, or by eating spoiled food.

9. Hemorrhoids - Hemorrhoids are dilations of the veins in the mucous membrane of the rectum.

10. Hepatitis - Inflammation of the liver which causes jaundice and, in some instances, liver enlargement.

11. Hernia - Hernia, rupture, is an abnormal protrusion of an organ or a part through the containing wall of its cavity, beyond its normal confines. The term applies usually to the abdominal walls when a portion of the digestive tract pushes through a weakened area.

12. Malignancy - Malignancy, cancer, is very common in the gastrointestinal tract. Symptoms depend on location. Obstruction, blocking of the passageway, is sometimes the first major indication of the presence of a tumor which has been steadily increasing in size. Indigestion, constipation, and changes in the shape and consistency of the stool are sometimes symptoms of malignancy and should not be overlooked.

13. Ulceration - Ulcers may occur anywhere along the digestive tract. Common areas are the stomach (gastric ulcers); the duodenum (duodenal ulcers); and the colon (ulcerative colitis). The cause of ulcerative colitis is unknown. Excess production of HCl (hydrochloric acid) in the stomach contributes to the development of gastric ulcers.

Review Exercise

Directions: Complete the following exercise by filling in the blanks. The answers can be found in the material you have studied in this activity. If you have problems or questions, ask your instructor for help.

1. Malignancy is a word meaning ______________________________ .
2. A gastric sore is called a ______________________________ .
3. Rupture is another word for ______________________________ .
4. The inability to have a bowel movement is known as ____________________ .
5. Frequent watery stools are called ______________________________ .
6. Gallstones are found in the ______________________________ .
7. Dilations of the veins in the rectum are called ____________________ .

LEARNING ACTIVITIES - continued

8. Inflammation of the lining of the stomach is known as ____________________ .

9. Inflammation of the intestines is called ____________________ .

10. Inflammation of the liver is known as ____________________ .

Directions: Review the following terms. If you do not remember what they mean, reread this module. You will need to know the definitions of these terms in order to complete the next activity.

1. Alimentary Canal
2. Appendix
3. Ascending Colon
4. Cecum
5. Chyme
6. Colon
7. Descending Colon
8. Duodenum
9. Ileum
10. Jejunum
11. Mucous
12. Peristalsis
13. Pylorus
14. Transverse Colon

ACTIVITY #5. Exercise - Digestive System

Directions: Complete the following by filling in the blanks. The answers can be found in the material you have studied in this module. If you have any questions or problems, ask your instructor to help you.

1. The long muscular tube that connects the pharynx to the stomach is the ______

____ .

2. The small intestine is approximately ____________________ feet long.

3. The three sections of the small intestine are (a) ____________________ ,

(b) ____________________ and (c) ____________________ .

4. The type of membrane which lines the entire intestinal tract from mouth to rectum is called ____________________ membrane.

5. The microscopic finger-like projections that line the intestinal tract are the ___

____ .

6. What is the function of these finger-like projections? ____________________

____

7. What is the function of the gallbladder? ____________________

____

____

LEARNING ACTIVITIES - concluded

8. The process that prepares food for absorption is called ____________________

____ .

9. The substance that digests fats in the body is ___________________________

____ .

10. Frequent liquid bowel movements are referred to as ______________________ .

ANATOMY AND PHYSIOLOGY FOR HEALTH CARE WORKERS

Module E - Circulatory System

RATIONALE

The circulatory system carries oxygen and nutrients throughout the body to nourish all the body cells. Likewise, it carries waste away from the cells. When you understand the circulatory system and how it functions, you will recognize the symptoms which tell you that your patient needs assistance.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Label fourteen parts of the heart on a given diagram.
2. Identify how blood flows through the heart.
3. Identify one function for two of the six parts of the circulatory system.
4. Identify one function for two of the three main components of blood.
5. Identify characteristics of blood pressure and pulse.
6. Identify normal readings for blood pressure and pulse.
7. Identify conditions relating to the circulatory system.
8. Identify terms used to describe parts of the circulatory system.

LEARNING ACTIVITIES

Directions: All the information you need to complete this module successfully is included in the learning activities. The written activities are included to help you prepare for the Post Test and to help you learn the information presented. You will be instructed what to do as you proceed with the module. Always go to your instructor if you have any questions.

If there is a large diagram or model of the heart or circulatory system available in the lab, use it to help you while you study the material in this module.

ACTIVITY #1. Circulatory System

Directions: Read the following.

Structure and Function

The circulatory system is made up of the heart, the central pumping station; blood vessels; lymphatic vessels; lymph nodes; spleen; and the blood itself. The system is a continuous network.

LEARNING ACTIVITIES - continued

The lymphatic system assists the blood circulatory system in supplying food and oxygen to the tissues, carrying away waste products, and filtering waste from the general circulation.

There are two phases to the circulation of blood:

1. the general circulation which carries blood throughout the body, with the exception of the lungs

2. the pulmonary circulation which carries blood from the heart to the lungs

The blood circulates throughout the body very rapidly; a complete tour takes only about one minute.

The Heart

The human heart weighs well under one pound and is only a little larger than an adult's fist. It is an important, hard-working organ. A hollow, muscular organ, it is located in the rib cage where it is protected by the breastbone, sternum, in the front, and the spine, vertebrae, in the back.

The heart muscle is called the myocardium. A wall, called the septum, divides the heart cavity down the middle into a "right heart" and a "left heart". Each side of the heart is divided in half into an upper chamber, the atrium, and a lower chamber, the ventricle. Valves regulate the flow of blood through the heart, to the pulmonary artery, and to the aorta. The entire heart is enclosed in a sac called the pericardium. The smooth lining inside the heart is called the endocardium. This tissue forms the valves which open and close like an umbrella.

The heart is really a "double pump". One pump, the right heart, receives the blood which has just come from the body after delivering nutrients and oxygen to the tissues. It pumps dark, bluish-red blood through the pulmonary artery to the lungs where the body rids it of a waste gas, carbon dioxide, and picks up a fresh supply of oxygen. The oxygen restores the bright red color to the blood and the second pump, the left heart, then pumps this red, oxygenated blood through the great artery, the aorta. It is distributed from the aorta by smaller arteries to all parts of the body. Nerve impulses make the heart contract regularly according to body needs. The control of the contractions of the heart muscle is located in the sinoauricular node located in the opening of the superior vena cava into the right atrium. The node is called the pacemaker of the heart. A new device called the electric cardiac pacemaker has successfully maintained a normal heartbeat under conditions of cardiac arrythmia or complete heart block.

Circulation of Blood Through the Heart Chambers - the Cardiac Cycle

If there is a large diagram of the heart available in your training area, use it to trace the blood through the heart as you read the following information. This will help you understand the cycle. You can also refer to the diagram on page 5 of this module.

Blood enters the right atrium through the inferior and the superior vena cava. Simultaneously, blood enters the left atrium through the pulmonary veins. The

LEARNING ACTIVITIES - continued

valves, tricuspid and mitral, separating the atria from the ventricles, are closed during this filling of the atria. When the volume and pressure of blood in the atria exceed that in the ventricles, the muscles of the ventricles contract. As the muscles in both ventricles shorten, the valves, tricuspid and mitral, are pulled down and open. Atrial systole, contraction, occurs as all blood is forced out of the atria into the ventricles. When the ventricles are filled, the tricuspid and mitral valves close simultaneously and the familiar "lubb" sound may be heard through a stethoscope. The atria are at that time in a momentary state of relaxation, atrial diastole.

As pressure rises within the ventricles, the force of the blood causes the semilunar valves of the aorta and pulmonary artery to open. Blood entering the pulmonary artery is deficient in oxygen. Blood flowing into the aortic arch through the aortic, semilunary, valve from the left ventricle is rich in oxygen and is carried to all parts of the body through the arteries.

The forceful contraction of the ventricles is called ventricular systole. The semilunar valves close to the sound of "dupp" as the ventricles empty preventing backflow of the blood. When all the blood is forced from the ventricles, they are said to be in diastole. However, this momentary rest lasts less than one-half second before a new volume is received from the atria.

General Circulation

The general circulation of the blood has four functions:

1. to carry nourishment, oxygen, water, and secretions to all parts of the body, except the lungs, and back to the heart

2. to carry waste products such as carbon dioxide and other dissolved waste matter away from the various parts of the body

3. to help equalize body temperature

4. to protect the body from harmful bacteria

The general circulation leaves the heart from the left thick-walled ventricle by way of the aorta, the largest artery in the body. The aorta sends its many branches into the head, arms, trunk, and legs. Following its tour of the body, the blood returns to the opposite side of the heart from which it started. It enters the right side of the heart by way of the vena cava.

Pulmonary Circulation

The pulmonary circulation carries blood from the heart to the lungs and back to the heart. The pulmonary artery carries blood from the heart that is a darker red than when it leaves the lungs. This is because the blood has accumulated waste products during its tour of the body. One of the waste products, carbon dioxide, is exchanged for a new supply of oxygen when the blood reaches the lungs, and the blood then becomes bright red again.

LEARNING ACTIVITIES - continued

The pulmonary circulation starts its tour by leaving the right ventricle of the heart through the pulmonary artery which carries the blood to the lungs. Here the exchange of carbon dioxide for oxygen takes place and the blood, freshly supplied with oxygen, returns to the heart. It enters the left atrium, the opposite side from which it left the heart, and is now ready to make another tour of the body, by way of the general circulation, to distribute its fresh supply of oxygen.

Portal Circulation

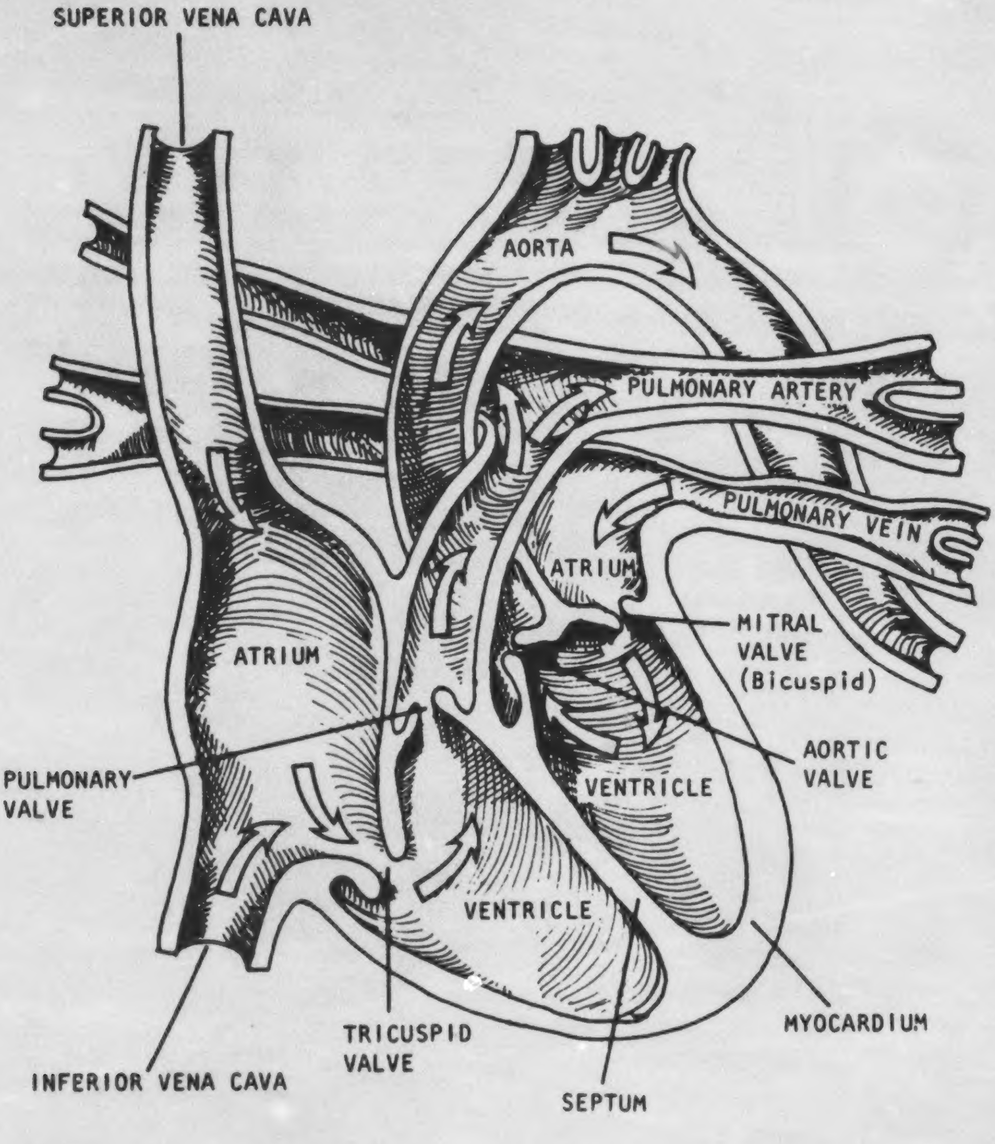
The circuit away from the heart and back again characteristically involves only one set of capillaries, except in the vessels of the abdominal organs. The blood supplied to the spleen, pancreas, stomach and intestines by the systemic arteries is collected into a large vein, the portal vein, which enters the liver. As the blood passes through the liver, it exchanges nutrient materials with the liver cells, is collected into the hepatic veins and empties into the large systemic vena cava inferior just before the opening into the right atrium. This is called portal circulation.

ACTIVITY #2. Heart Diagram

Directions: The diagram of the heart on page 4.E.5 shows the circulatory route of the blood through the heart. Reread the information on the cardiac cycle in Activity #1 of this module as you study the diagram. Learn the names of the structures through which the blood passes during the cardiac cycle.

LEARNING ACTIVITIES - continued

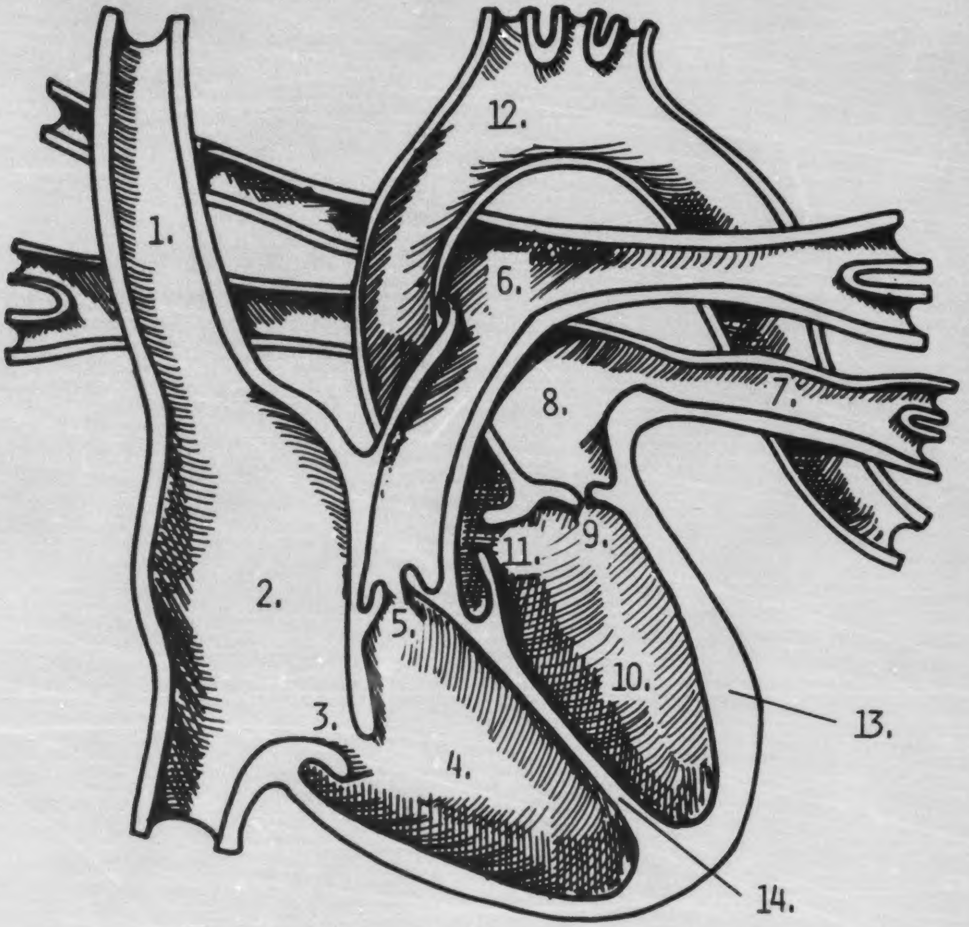
HEART DIAGRAM


SUPERIOR VENA CAVA
AORTA
PULMONARY ARTERY
PULMONARY VEIN
ATRIUM
ATRIUM
MITRAL VALVE (Bicuspid)
AORTIC VALVE
PULMONARY VALVE
VENTRICLE
VENTRICLE
MYOCARDIUM
TRICUSPID VALVE
INFERIOR VENA CAVA
SEPTUM

LEARNING ACTIVITIES - continued

Exercise - Cardiac Cycle

Directions: Using the blank lines provided at the bottom of this page, name the parts of the heart indicated by the numbers on this diagram. Use arrows to trace the flow of blood through the heart on the diagram.



1. ______________________________

2. ______________________________

3. ______________________________

4. ______________________________

5. ______________________________

6. ______________________________

7. ______________________________

8. ______________________________

9. ______________________________

10. ______________________________

11. ______________________________

12. ______________________________

13. ______________________________

14. ______________________________

LEARNING ACTIVITIES - continued

ACTIVITY #3. Blood Pressure and Pulse

Directions: Read the following.

Blood pressure is the force exerted by the blood against the artery walls. Each time the heart contracts, pumps, and sends blood pouring out of the heart into the arteries (blood vessels) pressure is exerted against the walls of these vessels. When blood pressure is measured, what is being measured is the amount of pressure on the artery wall in the arm. The pressure is measured during the heart cycle: (1) when the heart contracts (systolic pressure), and (2) when the heart relaxes (diastolic pressure). Systolic pressure is always higher because it is the pressure at the time the heart is making its strongest pumping action. The measurement of blood pressure is important when the patient is being examined and often reveals important information about the way the heart is functioning and the condition of the blood vessels. The average normal blood pressure reading is 120 (systolic)/80 (diastolic).

The pulse is the intermittent change in the shape of an artery due to an increase in the tension of its walls following the contraction of the heart. It is one of the most sensitive indicators of how the heart is functioning. As the blood is pumped out of the heart into the arteries, it causes the arteries to expand. This expansion can be felt by the fingers when they are placed on pressure points. The area where an artery crosses a bone close to the surface of the skin is called a pressure point. The most convenient and most commonly used pressure point is where the radial artery crosses the bone on the thumb side of the wrist. The characteristics of the pulse are:

1. Rhythm - the pattern by which the heartbeats are spaced. A healthy heart has a regular rhythm, with beats evenly spaced.

2. Rate - the number of pulse beats per minute. Age and the amount of activity just before counting will affect the pulse rate. Any change from normal is a symptom, not a disease. Many conditions can change the rate of pulse. The normal rate for one minute is different for infants and adults.

   INFANTS - 110 - 130 beats per minute, normal average
   ADULTS - 60 - 80 beats per minute, normal average

3. Force - the strength of the beat. Normally, the beats are equally strong as felt by the fingers at pressure points.

4. Tension - indicates the amount of resistance the artery gives when the finger is pressed against it. Tension or amount of pressure needed to feel the pulse will differ from patient to patient.

LEARNING ACTIVITIES - continued

ACTIVITY #4. Blood Vessels

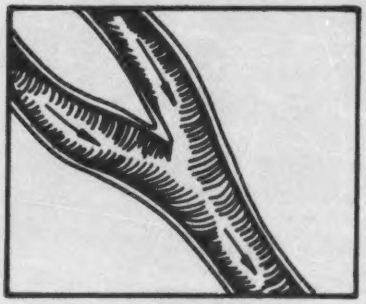
Directions: Read the following.

The heart pumps the blood to all parts of the body through a remarkable system consisting of three types of blood vessels: arteries, capillaries, and veins.

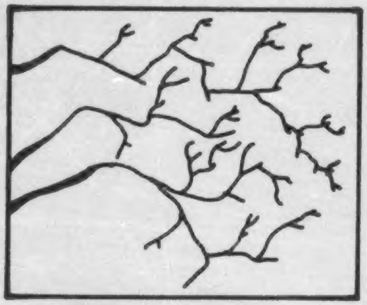
1. The arteries carry blood away from the heart. Arteries have elastic walls which expand and contract with the pumping beat of the heart. The aorta, the artery leading directly from the heart, is the largest blood vessel in the body. Blood carried by the aorta is bright red because it has just received a fresh supply of oxygen from the lungs. The blood carried by the pulmonary artery is a darker red because it is heavily laden with carbon dioxide which will be exchanged for oxygen in the lungs. As the arteries become smaller and before they become capillaries, they are referred to as arterioles.

2. The capillaries are small vessels that can be seen only through a microscope. They connect smaller arteries with smaller veins or venules like a canal system. Their walls are extremely thin so nourishment can pass out through them to the surrounding tissues and waste products from the tissues can be absorbed back into the bloodstream through them. This distribution and absorption is called capillary action.

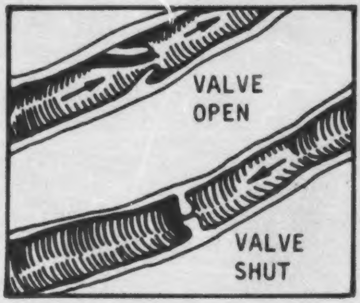
3. The veins carry blood back to the heart. Veins are much less elastic than arteries. The smaller veins which are continuous with the capillaries are referred to as venules. Study the diagrams of the blood vessels at the bottom of this page. Because the pumping action of the heart diminishes as the blood reaches the veins for its return journey, the veins are provided with valves that allow the blood to flow only in the direction of the heart. Sometimes the valves become weakened and distended, causing a condition called varicose veins. The blood returning to the heart carries waste products which causes it to be a darker red than when it left the heart. The pulmonary vein carries oxygenated blood since it is returning from the lungs to the left side of the heart. This blood is bright red, like the blood in the aorta. The largest vein in the body is the vena cava, which enters the right atrium of the heart.



ARTERY—
Away from the heart



CAPILLARIES—
Tiny network of
blood vessels



VEINS—To
heart

LEARNING ACTIVITIES - continued

Review Exercise

Directions: Complete the following. The answers can be found in the information you have read on the preceding pages of this module.

1. What mechanism to prevent the backflow of blood is present in the veins but not in the arteries? ____________________
2. Which have thicker walls, veins or arteries? ____________________
3. Name the small vessels that carry blood to every part of the body. __________

ACTIVITY #5. Terminology Exercise

Directions: In the blank space provided, write the correct medical term for each of the given definitions.

1. Largest vein in the body 1. ____________________
2. Upper, right heart chamber 2. ____________________
3. Valve 3. ____________________
4. Lower, right heart chamber 4. ____________________
5. Valve 5. ____________________
6. Blood vessel going to the lungs 6. ____________________
7. Blood vessel coming from the lungs 7. ____________________
8. Upper, left heart chamber 8. ____________________
9. Valve 9. ____________________
10. Lower, left heart chamber 10. ____________________
11. Valve 11. ____________________
12. Largest artery in the body 12. ____________________
13. Muscular wall of the heart 13. ____________________
14. Wall dividing the right and left side of the heart 14. ____________________

Check your answers with those given on the last page of this module.

LEARNING ACTIVITIES - continued

ACTIVITY #6. The Spleen

Directions: Read the following.

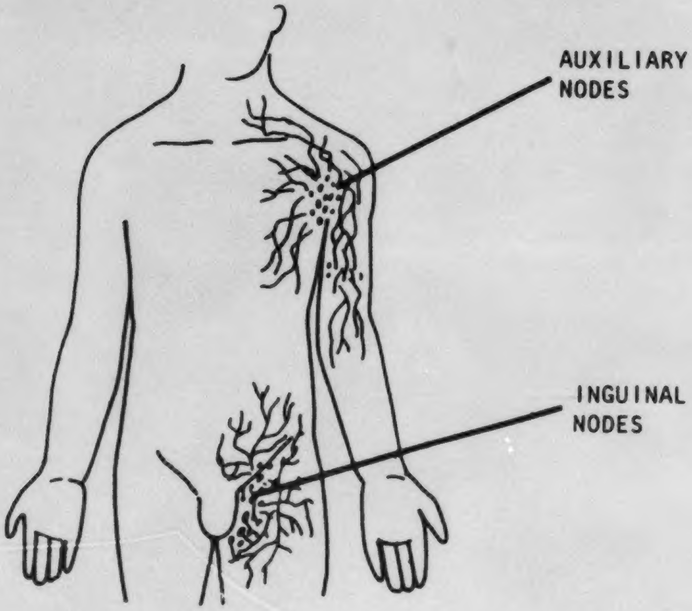
The spleen is a small organ in the upper left side of the abdominal cavity. It produces some of the white blood cells and destroys worn-out red blood cells. The spleen always has large quantities of blood passing through it, and acts as the body's blood bank. The spleen can store almost two cups of blood and quickly release it back into circulation when more blood is needed. This can occur during strenuous exercise or after hemorrhaging.

ACTIVITY #7. Lymphatic System

Directions: Read the following.

The lymphatic system is a network of vessels which assists the general circulation in returning blood to the heart.

After blood leaves the capillaries, most of it enters the small veins. However, some of the blood is drained off into open-end tubes called lymphatic vessels which carry it to the lymph nodes and the larger lymphatic vessels before it is carried through the general circulation. There are two reasons for this: (1) some of the strain is removed from the veins, which are not nearly as muscular as the arteries; (2) impurities (unclean substances) are removed as the lymph fluid passes through the lymph nodes which act as filters.



The above diagram illustrates the lymph nodes of the auxiliary and inguinal areas as well as the complex network of lymph vessels which run throughout the body. You

LEARNING ACTIVITIES - continued

can feel these surface nodes. When there is infection in the body they often become enlarged because of the increased amount of bacteria they must filter out. For example, when caring for a patient with an infected finger, the nurse should observe the elbow and auxiliary regions for swelling and tenderness of the lymph nodes. The lymph nodes filter lymph fluid returning from the hand and they may become infected by the bacteria they trap. Lymph nodes also form some of the white blood cells. This will be discussed in the next activity.

ACTIVITY #8. Blood

Directions: Read the following.

If the blood vessels are thought of as a network of highways carrying nutrients and waste materials, blood may thought of as the trucks and cars traveling along those highways. The human body generally contains four to six liters of blood, depending on the person's size, sex, age, and general health. Both the quality and quantity of blood are indicative of the state of health.

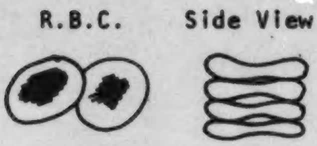
Blood is composed of liquid and cells. The liquid is called plasma and is the carrier of water, nutrients, waste products, and fibrinogen, the substance which helps blood to clot. It also carries gamma globulin which is used by the body to prevent or relieve the symptoms of some communicable diseases; for example, measles. The blood transports a protein called albumin. Plasma from which the fibrinogen, gamma globulin, albumin, and other materials have been removed is called serum.

There are three kinds of blood cells:

1. red blood cells, erythrocytes, that are produced in the bones and carry oxygen to the cells and carbon dioxide away from the cells;
2. white blood cells, leukocytes, some of which are produced in the bone marrow and others in the lymph nodes and spleen and which protect the body by surrounding and destroying germs and other foreign material;
3. platelets, thrombocytes, which are produced in the bones and are important in blood clotting.

LEARNING ACTIVITIES - continued

The following diagram will give you a graphic idea of the composition of the blood. **NOTE:** A cubic millimeter is approximately the size of two pinheads.

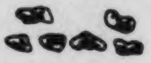


RED BLOOD CELLS

5,000,000 per cubic millimeter
Carry oxygen and carbon dioxide
Manufactured in bone marrow.

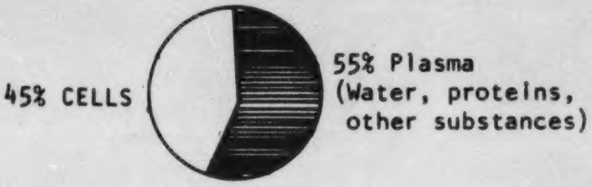
WHITE BLOOD CELLS

6,000 per cubic millimeter
Destroy bacteria
Manufactured in lymph nodes



BLOOD PLATELETS

300,000 per cubic millimeter
Help blood clotting
Formed from bone cells in bone marrow—Smallest of blood cells



Percentage of cells versus liquid portion of blood

Review Exercise

Directions: Complete the following. Use the blank spaces provided for your answers. Check your answers with those given on the last page of this module.

Name the blood cells which:

1. help fight infection ____________________
2. are most numerous ____________________
3. release CO_2 into the lungs ____________________
4. give blood its red color ____________________
5. help form a network of fibers near wounds ____________________
6. are the liquid part of blood ____________________
7. are formed in lymph tissue ____________________
8. are the smallest of blood particles ____________________

LEARNING ACTIVITIES - continued

ACTIVITY #9. Conditions Associated with the Cardiovascular System

Directions: Read the following.

An abnormal condition of any part of the cardiovascular system - pertaining to the heart and the blood vessels - will have an effect on the total body system. Long-standing abnormalities of the blood vessels will result in heart disease. You must know about the conditions associated with the cardiovascular system to complete the Post Test on this module.

Abnormal Conditions of the Cardiovascular System

Arteriosclerosis (Hardening of the Arteries)

Arteriosclerosis takes place gradually over a period of years. The blood vessels narrow and lose their elasticity. The narrowing causes blood pressure to rise and increases the workload of the heart. Signs and symptoms are decrease in circulation, coldness, tingling, loss of sensitivity, headaches, dizziness, and memory lapses.

Hypertension (High Blood Pressure)

When blood has difficulty passing through blood vessels, the heart must pump with more force and this causes the blood pressure to rise. The increased pressure puts additional stress on the heart and may cause the arteries to rupture.

Peripheral Vascular Disease

The blood vessels that serve the outer parts of the body, particularly those of the hands and feet, are referred to as peripheral blood vessels. Peripheral means located away from the center, toward the outer part. Diseases of these vessels affect that part of the body through which they pass, and influence the heart function.

Coronary Heart Attack

A coronary heart attack occurs when the coronary arteries which nourish the heart are blocked by becoming narrow, or by a blood clot. A clot which forms at the site of blockage is a thrombus. A clot may be formed somewhere else in the body and then travel to the heart to become lodged in a coronary artery; a moving blood clot is called an embolus. Patients with these conditions experience crushing chest pain and respiratory difficulty. Treatment is directed toward relieving the pain, reducing heart activity, and altering the clotting ability of the blood. Other names for a coronary heart attack are myocardial infarction, coronary occlusion, and coronary thrombosis.

Angina Pectoris (Angina)

In an angina attack, the coronary blood vessels are constricted, become smaller; they have narrowed gradually over a long period of time. Exertion, heavy eating, and emotional stress may bring on an attack.

LEARNING ACTIVITIES - continued

Cerebral Vascular Accident (C.V.A. Stroke)

A "stroke" is caused by the rupturing of arteries in the brain or blockage of these arteries by clots. Symptoms vary, but frequently include loss of consciousness, paralysis of one side of the body, and difficulty in swallowing and speaking. Patients may recover in varying degrees, depending on the cause of the stroke and the extent of brain damage.

Congestive Heart Failure

The heart, like any other muscle, will tire if it has to work too hard. At first, it enlarges, hypertrophies, and makes up for, compensates, the additional workload. Eventually, it reaches a point where it can no longer compensate, and failure follows. The heart is unable to pump the blood through the vessels rapidly enough, more fluid enters the tissues, and swelling, edema, occurs. Frequently the lungs fill up with fluid, making breathing difficult. This condition is referred to as congestive heart failure.

Blood Disorders (Blood Dyscrasias)

1. Anemia - Anemia is the result of a decrease in the quantity of red blood cells and blood loss as in hemorrhage. The anemic person has little energy and is usually pale. Dizziness, digestive problems, and dyspnea - difficult or painful breathing - may be present in severe cases of anemia.

2. Leukemia - This disorder is sometimes called "cancer of the blood." In this condition, excessive production of abnormal white blood cells occurs, and the number and quality of red blood cells decreases. The cause of many forms of leukemia is not known, but all forms are progressive, and often fatal. Patients with leukemia are extremely susceptible to infection, and the slightest trauma causes bleeding.

3. Hodgkin's Disease - This is a fatal, probably neoplastic (tumorous) disease which produces lymph node involvement in the neck and axilla, enlargement of the spleen and liver, and involvement of the lungs and bones. According to recent investigations, it is thought to be a unique example of an excessive immune response; the patient experiences exacerbations and remissions.

4. Lymphoma - A lymphoma is a tumor composed of lymph tissue.

5. Lymphosarcoma - Lymphosarcoma is malignant lymph tissue as seen in the terminal phase of Hodgkin's Disease.

Review Exercise

Directions: Using the blank spaces provided, complete the following statements. Answers can be found in the material you have studied in this activity.

1. A heart attack is called a ______________________________ .

2. Arteriosclerosis is called ______________________________ .

LEARNING ACTIVITIES - continued

3. Leukemia is ____ .

4. Another name for high blood pressure is ________________________ .

5. Angina is ____ .

6. Peripheral vascular disease is _______________________________ .

7. Loss of too many erythrocytes (RBC) results in ___________________ .

8. Congestive heart failure results when ___________________________

   ____ .

9. Another name for a "stroke" is ______________________________ .

10. "Heart attack" could mean any of the following three medical names:

    a. ________________________________

    b. ________________________________

    c. ________________________________

ACTIVITY #10. Terms Associated with the Cardiovascular System

__Directions:__ Using the Terminology Section at the end of this unit, and the material you have studied in this module, learn the definitions of the following terms. You may need to know this for the Post Test on this module.

1. Aorta
2. Arteries
3. Arterioles
4. Capillaries
5. Embolism
6. Endocardium
7. Force
8. Lymph
9. Lymph nodes
10. Myocardium
11. Pericardium
12. Plasma
13. Platelets
14. Portal Circulation
15. Rate
16. Rhythm
17. Serum
18. Tension
19. Thrombus
20. Veins
21. Vena Cava

LEARNING ACTIVITIES - continued

ACTIVITY #11. Exercise - The Circulatory System

Directions: Using the blank spaces provided, write in the answers to the following.

1. Name the six major parts of the circulatory system.

   1. ______________________________
   2. ______________________________
   3. ______________________________
   4. ______________________________
   5. ______________________________
   6. ______________________________

2. Plasma is ____ .

3. Blood contains three types of cells. Give the scientific name and the common name for each.

	SCIENTIFIC NAME	COMMON NAME
a.	______________________	______________________
b.	______________________	______________________
c.	______________________	______________________

4. List eight pathological (diseased) conditions associated with the circulatory system.

   a. ____
   b. ____
   c. ____
   d. ____
   e. ____
   f. ____
   g. ____
   h. ____

5. The heart is located in the ______________________ (rib cage, stomach, abdominal cavity).

6. The breastbone (sternum) protects the heart in ____________________ (front, back).

7. The backbone (spine) protects the heart in _______________ (back, front).

LEARNING ACTIVITIES - concluded

8. Myocardium means ____________________ (heart, head, lung) muscle.

9. Atria are the _________________ (lower, upper) chambers.

10. Ventricles are the _________________ (lower, upper) chambers.

11. The septum divides the heart into _____________________ and _________________ (right and left, upper and lower).

12. The heart is _____________________ (a pump, a muscle, both a pump and a muscle). The heart has four chambers and is divided into right and left sides by the ________________. The top chambers are called the right and the left ___________________. The bottom chambers are called the right and left ___________________. Blood enters the right atrium through two veins, the superior __________________ and the inferior ________________. The right atrium is separated from the right ventricle; blood travels through the ________ valve to the _______________ artery and to the lungs. In the lungs, it picks up oxygen and returns it to the __________________ of the heart by means of the _____________. From the left atrium, the blood passes through the ___________ _______ or _____________ valve, it enters the ______________________ (the largest artery of the body) where it brings oxygen and nutrients to all parts of the body.

You can find the answers to all the questions in this exercise in the material you have studied in this module. If you have questions, see your instructor.

ANSWERS

ACTIVITY #5

1. Vena Cava
2. Right Atrium
3. Tricuspid
4. Left Ventricle
5. Pulmonic
6. Pulmonary Artery
7. Pulmonary Vein
8. Left Atrium
9. Mitral/Bicuspid
10. Left Ventricle
11. Aortic
12. Aorta
13. Myocardium
14. Septum

ACTIVITY #8

1. W.B.C.
2. R.B.C.
3. R.B.C.
4. R.B.C.
5. Platelets
6. Plasma
7. W.B.C.
8. Platelets

ANATOMY AND PHYSIOLOGY FOR HEALTH CARE WORKERS

Module F - Respiratory System

RATIONALE

As a health care worker, you will be expected to check patients' vital signs - pulse, respiration, body temperature and blood pressure. This module will help you understand the respiratory system.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Label ten parts of the respiratory system on a given diagram.
2. Identify one characteristic or function for four of the ten parts.
3. Identify and describe the breathing process.
4. Identify the composition of air.
5. Identify the function of CO_2 in controlling the breathing process.
6. Identify terms or conditions relating to the respiratory system.
7. Identify terms used to describe parts of the respiratory system.

LEARNING ACTIVITIES

Directions: All the information you need to complete this module successfully is included in the activities section. The written activities are included to help you prepare for the Post Test and to help you learn the information presented. You will be instructed what to do as you proceed with the module. Always go to your instructor if you have any questions.

If a large diagram or model of the respiratory system is available in the lab, use it to help you study the material in this module.

ACTIVITY #1. Respiratory System

Directions: Read the following.

The respiratory system is sometimes called the "lifeline" of the body. Without the oxygen carried by this system, life cannot be maintained. When diseases of the respiratory tract interfere with the vital exchange of oxygen and carbon dioxide, acute distress results. ALL NURSING CARE IS DIRECTED TOWARD MAKING BREATHING EASIER.

LEARNING ACTIVITIES - continued

Structure and Function

The respiratory system extends from the nose and mouth to the tiny alveoli, air sacs, which make up the bulk of the lungs. The organs of respiration include the nose; mouth; pharynx; throat; larynx, voice box; trachea, windpipe; bronchi; bronchioles, or little bronchi; and lungs. The sinuses, diaphragm, and intercostal muscles between the ribs are called auxiliary structures. Study the diagram on page 4.F.5 before you proceed with this activity.

Nose

The air is warmed, moistened, and filtered as it passes through the nasal cavities which are separated by the nasal septum. The surface of the nasal cavities is moist from mucous and warm from blood flowing just under it.

The nerve endings responsible for the sense of smell are located in the nasal mucosa, and four pairs of sinuses, openings of irregular shape, drain into the nasal cavity.

Pharynx

The pharynx is commonly called the throat, and both air and food pass through this area. Two pairs of organs, the tonsils and adenoids, that seem to give more trouble than service to the body, are located in the pharynx.

Larynx

The larynx, voice box, is located just below the pharynx. It is composed of several pieces of cartilage. The largest piece of cartilage, the thyroid cartilage, is commonly called the "Adam's apple." One of the cartilages of the larynx, the epiglottis, acts as a lid to close off the larynx when swallowing. Occasionally, this lid does not work properly; this causes coughing and choking as food enters the larynx where only air should go. Usually the food is coughed back into the throat and causes no problem.

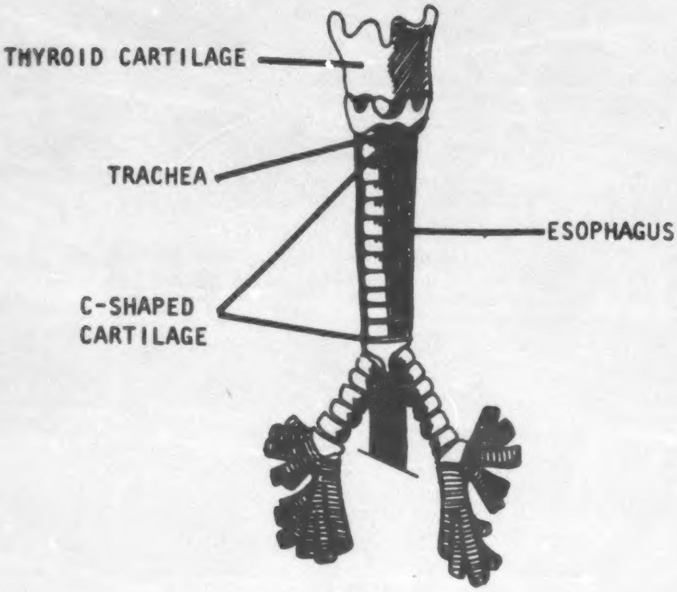
Expiration, breathing out, rids the body of excess carbon dioxide. As it passes through the larynx, it may be used to produce sound. Vocal cords, two folds of tissue, extend across the inside of the larynx. The term glottis is used to describe the opening between the vocal cords or folds of tissue. Changes in the length of the folds and the opening, glottis, as air passes outward produce the sounds used to speak. These sounds are further changed by being bounced against the walls of the sinuses and by being shaped by the tongue and lips. With a cold, the sinuses often become filled with mucous and cannot function properly.

Trachea

By placing a finger against the throat directly above the breastbone, the shape of the trachea or windpipe can be felt. Its framework is made up of an almost noncollapsible material, namely, fifteen or twenty "c-shaped" rings of cartilage placed one above the other with only a little soft tissue between them. This framework is "c-shaped" because the esophagus lies directly behind the trachea and fits in the open part of the "c". Because air has no other way of getting to the lungs, complete trachea obstruction results in death within minutes.

LEARNING ACTIVITIES - continued

TRACHEA



Review Exercise

Directions: Complete the following exercise by filling in the blanks. The answers to the questions can be found in the material you have studied in this module. If you have any difficulty or questions, ask your instructor to help you.

1. The name of the structure which separates the nasal cavity is the __________ .
2. A function of the nose is to ______________________________ .
3. The nerve endings for the sense of smell are located in the ______________ .
4. Another name for throat is ______________________________ .
5. The names of the two organs found in the throat are _______________ and _______________.
6. Another name for the voice box is ______________________________ .
7. The name of the cartilage that acts as a lid to close off the larynx when swallowing is the ______________________________ .
8. Sounds are produced by air passing through the vocal cords and are shaped by the ____________ and ______________.
9. The cartilage which helps hold open the trachea is shaped like a __________ .
10. The organ which lies directly behind the trachea is the ________________ .

LEARNING ACTIVITIES - continued

Bronchi, Bronchioles, and Alveoli

One way to picture the thousands of air tubes that make up the lungs is to think of an upside-down tree. The trachea is the main trunk, the two bronchi are the two main branches of the tree. In each lung the bronchus - this is the singular form of the word bronchi - branches into bronchioles. The smallest bronchioles end in structures shaped like miniature bunches of grapes called alveoli. The diagram on page 5 (4.F.5) of this module will give you a graphic idea of this upside-down tree or, if there is a large diagram of the respiratory system in your classroom use that for reference as you study this module.

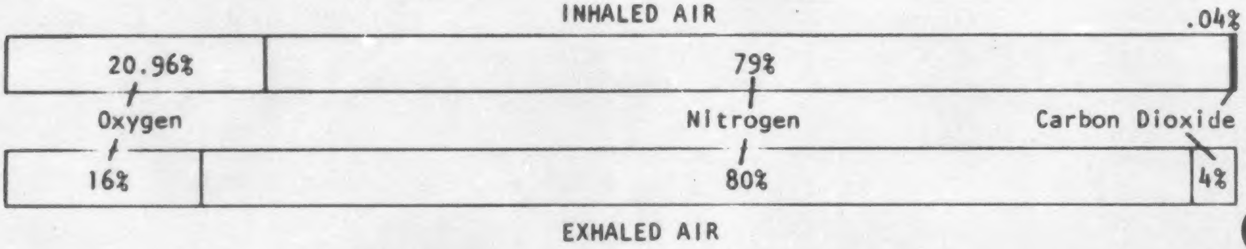
It is at the level of the alveoli that the exchange of gases takes place. Carbon dioxide, brought to the lungs by the pulmonary artery, passes through tiny capillaries which surround the alveoli. The carbon dioxide escapes through the walls of the alveoli and is exhaled. The oxygen absorbed by the blood is carried back to the heart by the pulmonary vein and is then pumped through the circulatory system. It is carried through the circulatory system by the erythrocytes or red blood cells.

Lungs

The two lungs are found in the thoracic cavity. They resemble cones. The lungs are divided into two sections called lobes. The left lung has two lobes and the right lung is larger and has three lobes. The heart occupies the extra space provided by the difference between the size of the two. The pointed surface of the lung is called the apex; the broad surface is the base. Double-thick pleura, which are thin sheets of membrane, cover the lungs. The pleura are separated from the lungs by a small amount of fluid. The base of the lungs is attached to the diaphragm. When the diaphragm and intercostal muscles contract, the thoracic cavity enlarges, pulling the lungs downward and out; air rushes into the lungs (inspiration). When these muscles relax, the thorax becomes smaller, making the space within the lungs smaller and forcing the air out of the lungs (expiration). INSPIRATION PLUS EXPIRATION EQUALS RESPIRATION. The diagram on page 7 (4.F.7) of this module illustrates what happens during the breathing process.

Composition of Air

Oxygen, also called O_2, is defined as a gas that is found in air. Not all of the air is oxygen. Air contains 20% oxygen. Only a small part of the air is carbon dioxide or CO_2. The following diagrams show the comparative percentages of O_2 and CO_2 found in inhaled and exhaled air.



LEARNING ACTIVITIES - continued

Review Activity

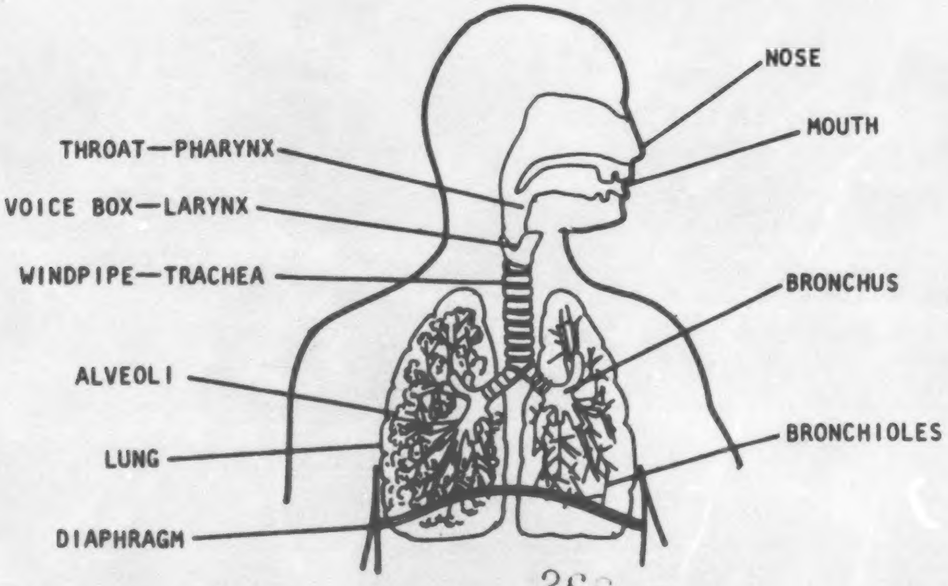
Directions: Match the following. The answers can be found in the material you have studied in this module. If you have any questions or difficulty, ask your instructor to help you.

1.	________	larynx	A.	right lung
2.	________	trachea	B.	breastbone
3.	________	pharynx	C.	left lung
4.	________	apex	D.	muscle at the base of the lung
5.	________	diaphragm	E.	throat
6.	________	sternum	F.	windpipe
7.	________	three lobes	G.	voice box
8.	________	two lobes	H.	top point of the lung
9.	________	O_2	I.	carbon dioxide
10.	________	CO_2	J.	oxygen

ACTIVITY #2. Diagram of the Respiratory System

Directions: Study this diagram and learn the location of the ten structures of the respiratory system.

THE RESPIRATORY SYSTEM

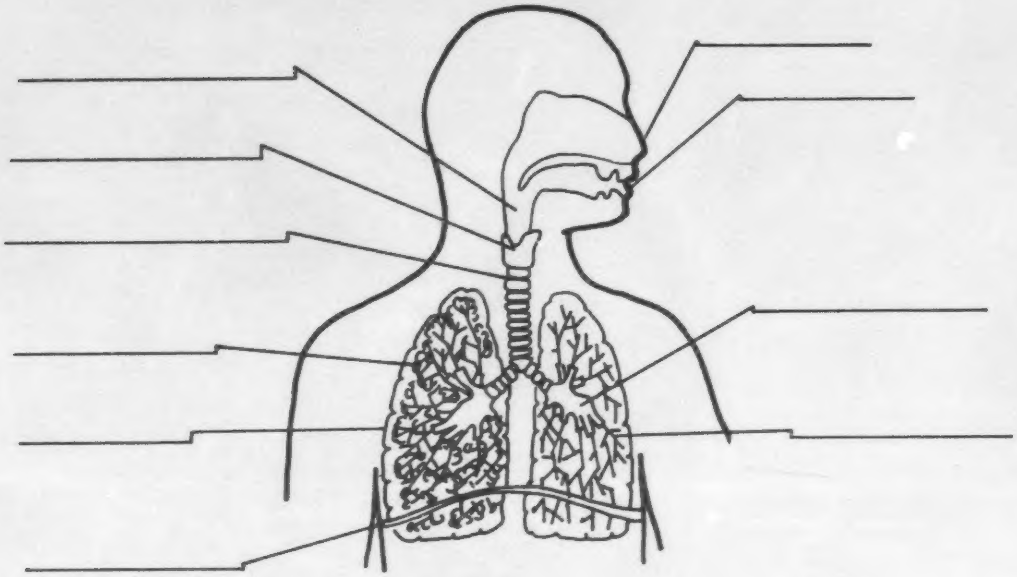

NOSE
MOUTH
THROAT—PHARYNX
VOICE BOX—LARYNX
WINDPIPE—TRACHEA
BRONCHUS
ALVEOLI
LUNG
BRONCHIOLES
DIAPHRAGM

LEARNING ACTIVITIES - continued

Review Activity

Directions: Complete the diagram by identifying the ten major parts of the respiratory system. Write the correct word in the spaces provided. You can check your answers with the diagram on the preceding page of this module.

THE RESPIRATORY SYSTEM



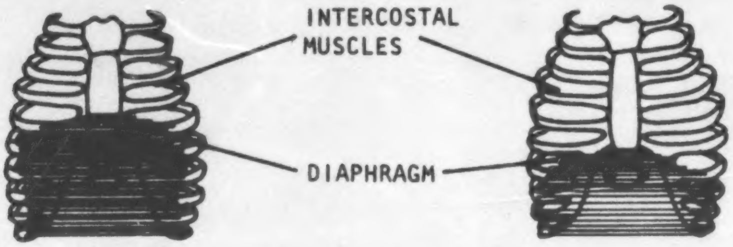
LEARNING ACTIVITIES - continued

ACTIVITY #3. Breathing Process

Directions: Read the following information; then, together with another student, give a demonstration of the breathing process.

Breathing is defined as the process by which oxygen in the air is brought into the lungs - inhaled. The blood absorbs the oxygen and carries it to all parts of the body. In this same process, the blood also gives up waste or carbon dioxide which is carried out of the lungs with the air that is breathed out - exhaled.

Study the illustrations below and note the difference in the lung size during the taking in and the letting out process.



Diaphragm wide and raised up
(EXHALE)

EXPIRATION

Diaphragm long and narrow
and pulled down
(INHALE)

INSPIRATION

Demonstration Procedure

Put your hands around the waist of a volunteer student and ask the volunteer to take in a deep breath. Feel the waist get smaller as the diaphragm pulls downward. See the chest go up and enlarge. Hold your hand in front of the volunteer's mouth. Note, there is no outward movement of air. The intercostal muscles, the muscles between the ribs, also contract and help pull the rib cage upward.

Instruct the volunteer to breathe out or release the air. Feel the waist enlarge as the diaphragm relaxes and pushes up. Watch the chest go down and become smaller. Hold your hand in front of the volunteer's mouth. Note, there is air moving out. The intercostal muscles relax as the rib cage moves down.

This demonstration shows that breathing - respiration - is a taking in and letting out process. Oxygen is taken in and carbon dioxide is let out.

The breathing process goes on regularly like the tides of the sea; thus, breath is sometimes called tidal air. Approximately 500 ml. of air, about one pint, is exchanged in each normal breath. The largest amount of air that can be breathed in

LEARNING ACTIVITIES - continued

and out in one inspiration and expiration is known as the vital capacity; in most adults this is about 4,500 ml. You will need to know the terms tidal air and vital capacity for the Post Test on this module.

Respiration is controlled by the stimulation of carbon dioxide on the respiratory center in the medulla which is a part of the brain.

The breathing rate depends on the amount of carbon dioxide in the blood. Exercise such as running makes the cells work faster and puts out more waste products, carbon dioxide; therefore, the faster the running, the quicker the breathing. The phrenic nerve goes directly to the diaphragm and acts automatically (from the medulla in the brain) to contract and relax the diaphragm.

ACTIVITY #4. Terminology - Respiratory System

Directions: Learn these terms and conditions relating to the respiratory system. You will need to know this information for the Post Test on this module.

Respiratory Conditions

1. ASTHMA - An asthma attack is the result of sensitivity to an allergen. The body responds to the presence of this allergen by:
   a. increased production of mucous in the bronchi and the tiny branches of the bronchi, bronchioles, and
   b. swelling of the mucous membrance that lines the respiratory tract
2. COMMON COLD - The greatest loss of man-hour productivity each year is due to the common cold! The respiratory infection spreads rapidly and is often the basis for more serious respiratory disease. It lowers resistance and leaves the body open to infection. The direct cause of the common cold is a virus. The indirect or contributing causes are lowered body resistance, chilling, fatigue, insufficient nourishment, and lack of rest.
3. EMPHYSEMA - Almost 16,000 Americans die of emphysema every year and the number of cases is increasing. In this disease, the tiny alveoli lose some of their elasticity. They cannot become smaller as they should during expiration, so the carbon dioxide is trapped.
4. LARYNGITIS - An inflammation of the voice box is called laryngitis.
5. PLEURISY - Pleurisy is an inflammation of the pleura and is characterized by severe pain in the infected area due to the rubbing of the pleura against the lung.
6. PNEUMOTHORAX - Pneumothorax is the presence of air or gas in the pleural cavity. It is caused by a rupture of an abscess or cavity of the lung, or the rupture of an air sac or bronchiole. An artificial pneumothorax can

LEARNING ACTIVITIES - continued

be produced by the introduction into the pleural cavity, through a needle, of air or other gas. This produces collapse and immobility of the lung, with obliteration of cavities. The procedure is used to rest a diseased lung. The lung does not function while at rest.

7. TUBERCULOSIS - Tuberculosis, one of the oldest known diseases, still runs high as a cause of death. It results from a microorganism that is easily transmitted to others by sneezing and coughing. Fatigue, fever, weight loss, and hemoptysis, spitting of blood, are commonly present in tuberculosis. The organisms usually attack the lungs, but other parts of the body may also be invaded.

Terms

1. ADENOIDS - A mass of lymph tissue similar to the tonsils, found in the pharynx.
2. ANOXIA - A reduction in the oxygen content of the blood.
3. APNEA - Refers to a lack of breathing.
   a = without; pnea = respiration
4. CHEYNE-STOKES RESPIRATION - Intermittent, stop and go breathing; usually a period of dyspnea followed by a period of apnea which is then repeated.
5. DYSPNEA - Difficult breathing.
6. EPIGLOTTIS - A piece of cartilage that closes over the larynx when swallowing.
7. HYPERPNEA - Rapid breathing.
8. HYPERVENTILATION - Increased breathing; overbreathing.
9. ORTHOPNEA - A condition in which there is a need to sit up in order to breathe more easily.
10. PLEURA - A double-thick membrane enfolding the lungs.
11. SINUSES - Cavities within bones. In the respiratory system they are known as the paranasal sinuses, air cavities lined by mucous membrane which communicate with the nose and aid in voice sounds. They frequently become infected and cause a condition called sinusitis.
12. TONSILS - A mass of lymph tissue in the pharynx which acts as a filter to protect the body from invasion of bacteria and which aids in the formation of white blood cells.
13. CYANOSIS - A blue or gray tint to the skin caused by a lack of oxygen in the blood; often seen in the person's lips and nailbeds.

LEARNING ACTIVITIES - continued

ACTIVITY #5. Exercise on Terminology

Directions: Match the words in the left-hand column with the definitions in the right-hand column. Place the correct letter in the space provided. Answers to the questions are contained in the material you have studied in this module. If you have any difficulty or questions, ask your instructor to help you.

1. ________ Pointed end of the lungs
2. ________ Oxygen
3. ________ CO_2
4. ________ Dyspnea
5. ________ Hyperpnea
6. ________ Cheyne-Stokes Respiration
7. ________ Apnea
8. ________ Anoxia
9. ________ Cyanosis
10. ________ Tuberculosis
11. ________ Emphysema
12. ________ Asthma
13. ________ Bronchiole
14. ________ Alveoli
15. ________ Bronchus

A. Painful breathing

B. Highly contagious condition

C. Absence of breathing

D. Rapid breathing

E. "Little bronchus"

F. Mucous membranes swell with increased mucous

G. Reduction in oxygen content

H. Apex

I. Bluishness of skin and nailbeds

J. Needed for life, O_2

K. Condition with overblown air sacs

L. Right after windpipe

M. Tiny air sacs

N. Wasteful gas

O. Stop and go breathing

LEARNING ACTIVITIES - continued

ACTIVITY #6. Exercise - The Respiratory System

Directions: Using the blank spaces provided, complete the following exercise on the respiratory system. The answers can be found in the material you have studied in this module. If you have any questions or problems, go to your instructor for help.

1. The respiratory organs are those which help the breathing process.

   Name five. a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

   e. ____________________

2. What are the lungs? ____________________

   ____

3. What do you call the process of breathing in? ____________________

4. The larynx is the top of the windpipe and is another name for the ____________

   ____________________ .

5. Trachea is another name for the ____________________ .

6. Write a paragraph explaining how a person breathes. What happens to the air in the lungs? How does the diaphragm help? ____________________

   ____

   ____

   ____

   ____

7. In the blank spaces provided, write the medical term described.

   1. Tube connecting the throat and the bronchial tubes ____________________
   2. Grapelike clusters of air sacs within the lungs ____________________
   3. Large muscle that controls the size of the chest cavity ____________________
   4. Tubes found within the lungs ____________________

LEARNING ACTIVITIES - concluded

5. Two large, lightweight respiratory organs of the body ____________________

____

6. Exhaled air has the greatest increase in amount of ____________________

7. Exhaled air has the greatest loss in amount of ____________________

ANATOMY AND PHYSIOLOGY FOR HEALTH CARE WORKERS

Module G - Urinary System

RATIONALE

One way the body eliminates waste materials is through the urinary system. The kidneys are the principal organs of the body which secrete, form urine and eliminate it. Elimination of waste materials is necessary to maintain good health.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Label the five parts of the urinary system on a given diagram.
2. Identify one function for two of the five parts of the urinary system.
3. Label three parts of a kidney on a given diagram.
4. Identify one function for one of the three parts.
5. Identify the process of urine production and elimination.
6. Identify the composition of urine.
7. Identify terms and conditions relating to the urinary system.
8. Identify characteristics related to the urinary system.

LEARNING ACTIVITIES

Directions: All the information you will need to complete this module successfully is included in this section. The written activities are included to help you prepare for the Post Test and to help you learn the information presented. You will be instructed what to do as you progress through the module. Always go to your instructor if you have any questions.

If there is a large diagram or model of the urinary system available in the lab, use it to help you study this system.

ACTIVITY #1. The Urinary System

Directions: Read the following.

The body rids itself of liquid waste material through the Urinary System. The organs that make up this system are: the kidneys, ureters, bladder, and urethra.

LEARNING ACTIVITIES - continued

Kidneys

The kidneys function to:

1. filter (remove) wastes and excess water from the bloodstream.

2. secrete (produce) these wastes and water as urine.

Two bean-shaped organs, the kidneys, are held in place and protected by fats. Located in the abdominal cavity, behind the digestive organs, one on each side of the spinal column, they consist of three main parts: (1) the outer portion, called the cortex, where the urine is produced; (2) the middle area, the medulla, a series of tubes which drain the urine toward (3) the pelvis of the kidney (the renal pelvis). The diagram on the following page of this module will help you understand the location of these parts. The kidneys produce about 1,500 to 2,000 cc of urine every twenty-four hours. Renal is a word you will find used frequently in reference to the kidneys.

Ureters

The ureters are two hollow tubes that lead from the renal pelvis to the bladder. Urine passes through these ureters to reach the bladder.

Bladder

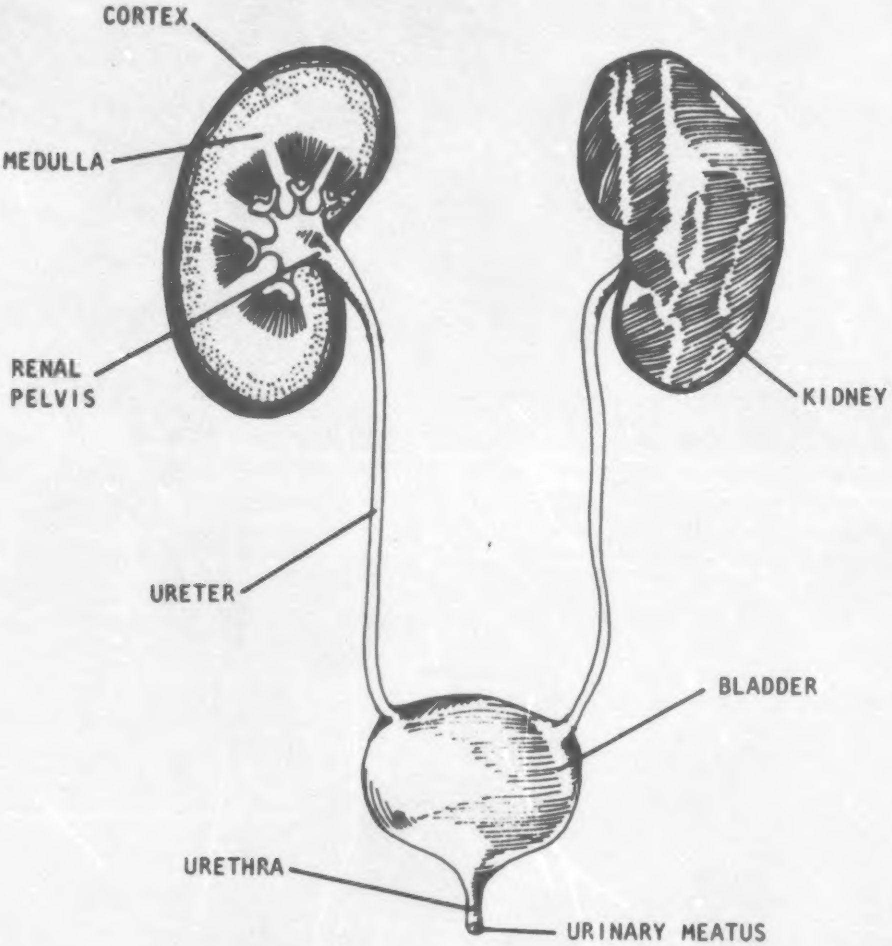
The urinary bladder, located in the pelvic cavity, is a large muscular bag where urine is temporarily stored. When the amount of urine stored in the bladder reaches 300 cc, there is normally an urge to empty the bladder, urinate. This act can be controlled to some extent through the nervous system. During urination the bladder muscles contract and force urine out of the body through the urethra. If the urine is free of bacteria, the bladder is considered to be a sterile body cavity. Another common term meaning urinate is void.

Urethra

To leave the body, urine passes from the bladder, down to the urethra, and out the external opening called the urinary meatus. The urethra of the female is from one to one and one-half inches in length; the urethra of the male is about eight inches long.

LEARNING ACTIVITIES - continued

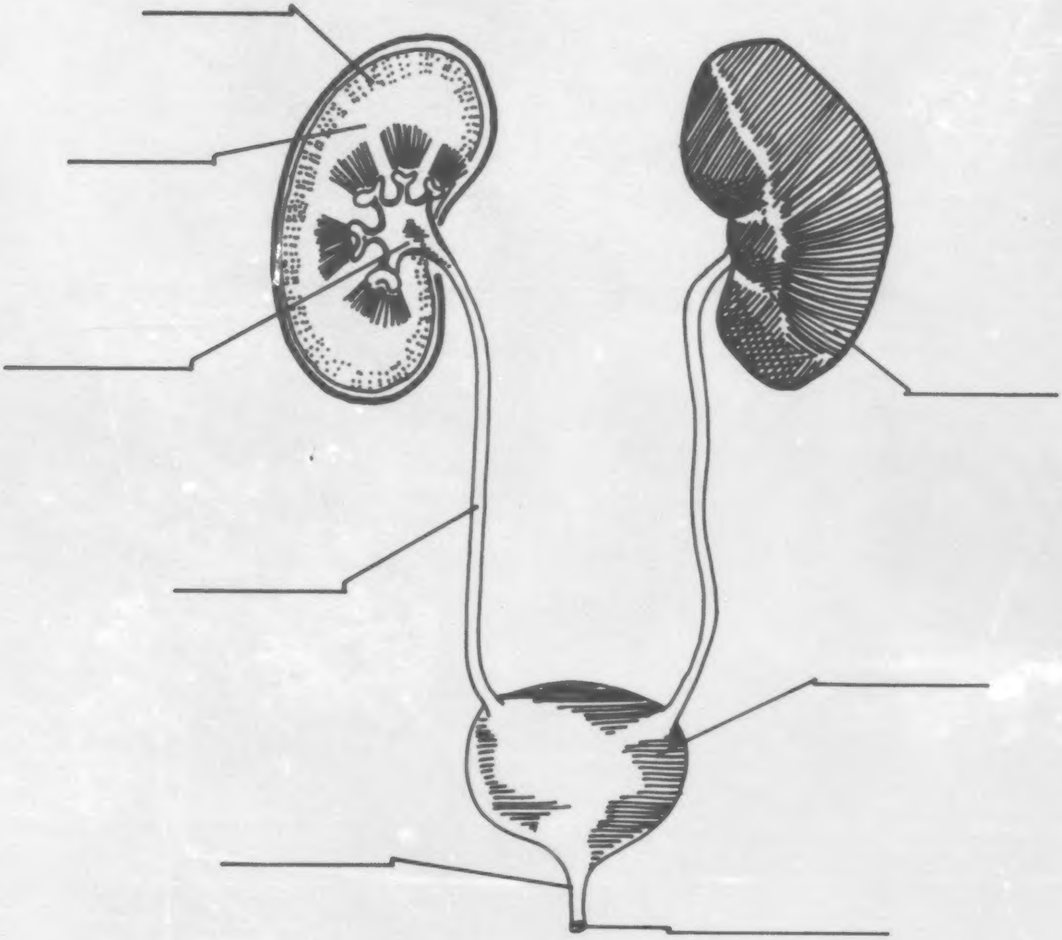
Directions: Study the location of the five parts of the total urinary system and the three main parts of the kidney as shown on the following diagram.


CORTEX
MEDULLA
RENAL PELVIS
KIDNEY
URETER
BLADDER
URETHRA
URINARY MEATUS

LEARNING ACTIVITES - continued

Review Exercise - The Urinary System

Directions: On the following diagram label the five parts of the urinary system and the three main parts of the kidney. Check your answers with the diagram on the preceding page of this module.



LEARNING ACTIVITIES - continued

Directions: Complete the following exercise by filling in the blank spaces. If you have any problems or questions, ask your instructor to help you.

1. The kidneys are located behind the ____________________ organs in the _______________ cavity.
2. The kidneys produce approximately ________________ to ________________ cc of urine a day.
3. The bladder is located in the ________________________ cavity.
4. When _________ cc of urine has collected in the bladder, there is an urge to urinate.
5. Another word meaning urinate is ____________.
6. If all urine is free of bacteria, the bladder must be a __________________________ body cavity.
7. The tube leading from the bladder to the outside of the body is the _________ .
8. The urethral opening on the outside of the body is the urinary _______________ .
9. Another word used to refer to the kidneys is ________________________________ .

Anwers to the above can be found in the material you have studied in this activity.

ACTIVITY #2. Urine Production

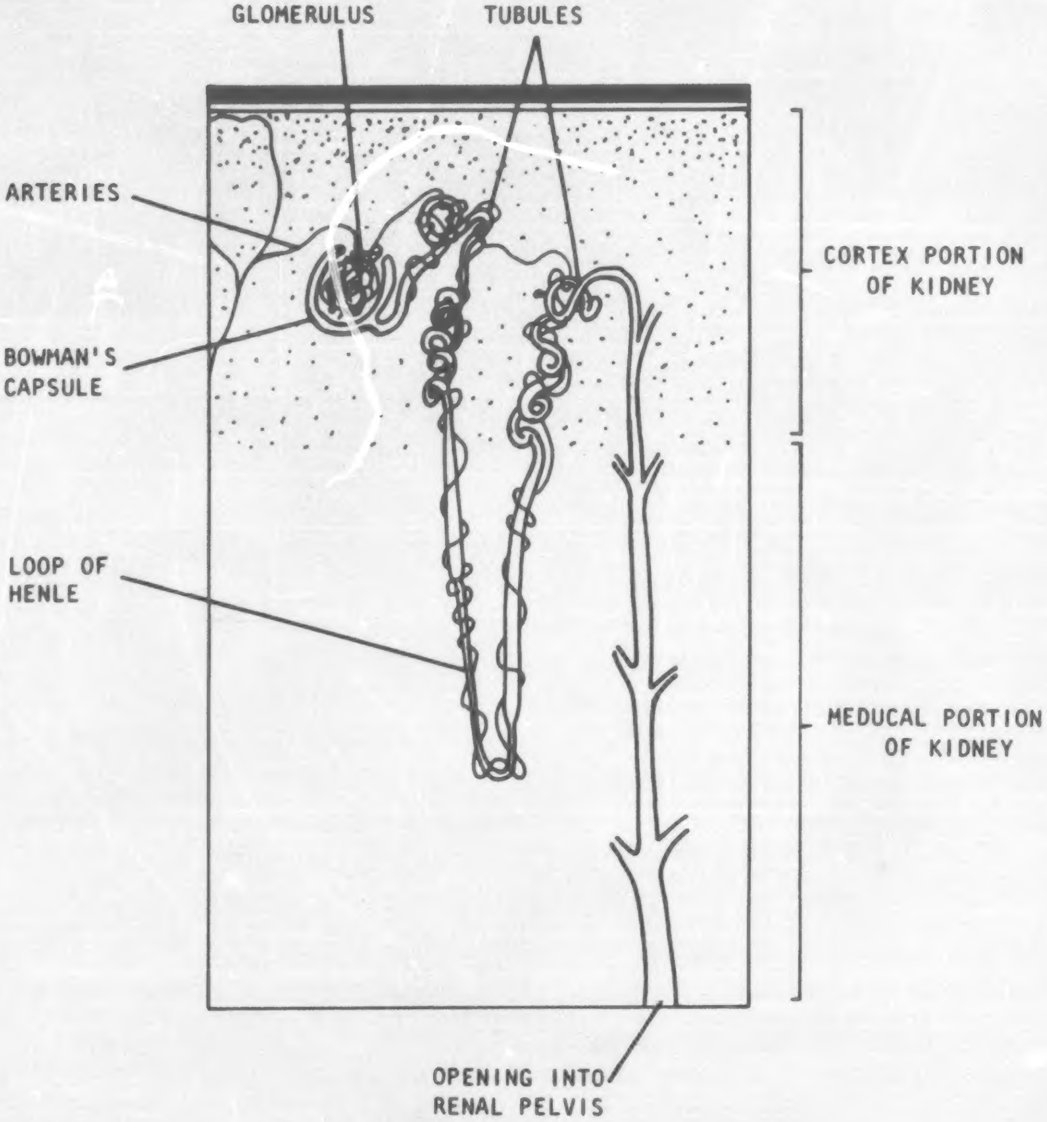
Directions: Read the following.

Urine Production

The renal arteries carry blood to the kidneys. As the blood passes through the kidney, wastes and water are removed by millions of tiny nephrons to form urine. This process is made possible by the many branches that pass through the medulla to the cortex. In the cortex, the blood vessels branch to form halls of capillaries called glomeruli. There are approximately one million glomeruli in each kidney. Each glomerulus is surrounded by a blind tube, the end of which resembles a cup and is called Bowman's capsule. The tube twists and coils within the cortex, dips down into the medulla, and eventually drains the urine through the structures of the medulla into the renal pelvis and then into the ureter. Waste products in large amounts of water are passed from the glomerulus to Bowman's capsule. The following diagram should help you understand the nephron unit.

LEARNING ACTIVITIES - continued

Directions: Study this diagram of a nephron which is the unit of structure of the kidney.


GLOMERULUS
TUBULES
ARTERIES
BOWMAN'S CAPSULE
LOOP OF HENLE
CORTEX PORTION OF KIDNEY
MEDUCAL PORTION OF KIDNEY
OPENING INTO RENAL PELVIS

LEARNING ACTIVITIES - continued

All the water needed to pass the waste products cannot be permanently lost from the body. Much of it is reabsorbed into the bloodstream as the branches of the glomerulus encircle the twisted tubules in the cortex. The blood vessels then merge to leave the kidney as the renal vein. Hormones also influence how much urine is produced. Approximately 1,500 to 2,000 cc of urine is produced each day. Following is a summary of how urine is produced.

1. Filtration - water and dissolved substances being filtered out of the blood by the glomeruli.
2. Reabsorption - water and dissolved substances are reabsorbed into the blood from the kidney tubules. This process prevents substances needed by the body from being lost in the urine. Glucose, for example, is entirely reabsorbed so that none of it is lost in the urine. However, in the disease diabetes mellitus, if blood glucose levels increase above a certain level, the tubular filtrate then contains more glucose than the tubule cells of the kidneys can reabsorb into the bloodstream. Some glucose or sugar then remains in the urine. Sugar in the urine (glycosuria) is a common symptom of diabetes.
3. Secretion - hydrogen ions (H^+) potassium ions (K^+) and certain drugs such as penicillin are secreted in the urine. Urine also secretes vitamins. If vitamins are taken in excess of the amount the body can use, they will be excreted in the urine.

Urine is 96% water and secretes waste products such as urea, creatinine, uric acid and various salts.

ACTIVITY #3. Terms, Conditions and Diseases of the Urinary System

Directions: Read the following. (You must know these terms, conditions and diseases for the Post Test on this module.)

Common Terms Involving the Urinary System

1. Anuria - lack of urine or no urine produced
2. Dysuria - painful or difficult urination
3. Hematuria - blood in the urine
4. Oliguria - diminished or small amount of urine
5. Polyuria - large amount of urine produced

Conditions and Procedures Involving the Urinary System

Retention

The bladder will comfortably hold about 300 cc of urine. In retention, the bladder will continue to stretch until it contains 1,000 to 1,500 cc of urine and the patient will become very restless and distressed. When a patient has a full bladder and is unable to urinate, there is retention of urine. The patient may need to be catheterized to relieve retention.

LEARNING ACTIVITIES - continued

Every effort should be made to encourage the patient to urinate to avoid catheterization. Some ways you can help are:

1. If it is permitted by the physician, the patient should be allowed to use the bathroom. If unable to use the bathroom, the female patient may sit up in bed on the bedpan and the male patient may use a urinal to void.

2. Condition permitting, leave the patient alone to void.

3. Sometimes, the sound of running water helps the patient urinate.

4. Pouring warm water over the meatus, or allowing the patient to sit in a tub of warm water, may help start the flow of urine.

Catheterization

Your patient may ask you what will happen in the catheterization process. You should explain the technique as follows: When a patient is catheterized, the nurse or the doctor inserts a sterile tube or catheter through the urinary meatus into the bladder. This tube is inserted to drain the urine out of the bladder. It may be removed immediately or left in place and connected to a Foley bag. If the catheter remains in place, it is called a Foley catheter or a retention catheter. A Foley drainage bag is a bag that collects urine drained through the catheter.

The bladder is a sterile body cavity. To prevent the bladder from being contaminated with bacteria, a sterile technique is used in catheterization.

Incontinence

A patient who constantly dribbles urine, or urinates without being aware of it, is said to be incontinent.

Patients who are incontinent require special nursing care. Often the patient becomes discouraged and needs support. The skin may become very irritated and ulcers may develop. The bed can be protected with incontinent pads but, to keep the skin dry and help prevent irritation and ulcers, these must be changed every time the patient is incontinent. Sometimes, perineal pads - similar to a sanitary napkin - help catch urine that is constantly dribbling.

The meatal area should be washed with soap and water several times a day. If the skin becomes irritated, exposing the area to air or applying cornstarch powder, not baby powder, may be helpful.

It may help prevent incontinence if the patient is put on the bedpan or offered the urinal every two hours even though it is not requested or felt to be needed.

LEARNING ACTIVITIES - continued

Edema

Edema is a symptom of most of the diseases affecting the kidneys. If the kidneys are diseased, they will not manufacture urine, blood will not be filtered, and urine and water will accumulate in the blood. This excess water may be forced out of the bloodstream and into the tissues under the skin. This increase of fluid under the skin is called edema. The edema appears as a puffy swelling of the face, hands and/or ankles. If, when pressure is applied with the fingers to the edematous skin and it leaves a mark, the edema is serious.

Residual Urine

Urine left in the bladder after urination is residual urine. It frequently occurs in cases of enlarged prostate gland or following surgery when some patients lose the elasticity in the bladder and are not able to completely empty it for a short period of time. The prostate gland is a gland that surrounds the urethra in the male. There is a diagram of this gland in Module I of this unit.

Cystoscopy

An examination of the bladder using a small instrument with a light on the end is called a cystoscopy. Under anesthesia, this instrument, called a cystoscope, is inserted through the urethra and permits examination of the interior of the bladder.

Pyelogram

An x-ray of the ureter and renal pelvis is called a pyelogram.

TUR

TUR is the common abbreviation for Transurethral Resection, a surgical procedure by which part of the prostate gland is removed by going through the urethra and cutting out the tumor or enlarged section. No external incision is made.

Diseases Affecting the Urinary System

Nephritis

Nephritis is an inflammation of the kidneys which interferes with their ability to function. If the kidneys are not functioning properly to filter blood and secrete urine, excess water and urine will accumulate in the blood and urinary output will be much less than normal. Eventually, there may be no urine output and some of the excess water in the blood will be forced out into the tissues under the skin, and the patient will become edematous.

Cystitis

Cystitis is an inflammation of the urinary bladder. When the bladder is inflamed, there is burning pain during urination, unusually frequent desire to void, and abnormally small amounts of urine, 50 to 100 cc, put forth each time.

LEARNING ACTIVITIES - continued

Renal Calculi

Renal calculi are stones that may form in either the kidney or the urinary bladder. When the patient voids, these stones may pass out of the body through the urine. Calculi will be gray or beige in color and look like fine particles of sand. Renal Colic, severe pain radiating from the kidney region around and over the abdomen into the groin, will probably occur when the stone passes.

Uremia

Uremia is an illness caused by the inability of the kidneys to eliminate the waste products of metabolism. Suppression is a term used to indicate the inability of the kidney to make urine.

Glomerulonephritis (glom-air-u-lo-knee-fright-is)

This is a form of nephritis in which the lesions primarily involve the glomeruli. The cause is unknown but often follows other infections, especially those of the upper respiratory tract.

Review Exercise

Directions: Complete the following by filling in the blanks. The answers can be found in the material you have studied in this activity.

1. Nephritis is an inflammation of the ______________________________ .
2. A patient whose kidneys are not functioning properly to filter the urine and excess water out of the blood may pass some of this excess water into the tissues under the skin. This is a condition known as ________________________ .
3. Inflammation of the urinary bladder is ________________________ .
4. Renal calculi are the same thing as ________________________ in the kidney.

Directions: Circle the correct answer.

A patient with cystitis will have a desire to void (more often, less often) and will void in (larger amounts, smaller amounts) than normally.

ACTIVITY #4. Terminology

Directions: Write the definition for the following words related to the Urinary System. The definitions can be found in the Terminology Section at the end of this unit. You may need to know these terms for the Post Test on this module.

1. catheterize: ____
2. nephritis: ____

LEARNING ACTIVITIES - continued

3. urethra: ______________________________
4. edema: ______________________________
5. renal: ______________________________
6. Foley bag: ______________________________
7. secrete: ______________________________
8. sterile: ______________________________
9. retention: ______________________________
10. ureter: ______________________________
11. void: ______________________________
12. filter: ______________________________
13. incontinent: ______________________________
14. meatus: ______________________________
15. excrete: ______________________________
16. renal calculi: ______________________________
17. cystitis: ______________________________
18. anuria: ______________________________
19. polyuria: ______________________________
20. dysuria: ______________________________

LEARNING ACTIVITIES - continued

Directions: Match the words in the left-hand column to the correct definitions in the right-hand column. The answers can be found in the material you have studied in this module.

1.	filter	A. ___	stones that may form in the kidney or the bladder
2.	secrete	B. ___	insert a tube to drain the bladder
3.	ureter	C. ___	fluid under the skin
4.	catheterize	D. ___	unable to urinate
5.	renal	E. ___	expel
6.	void	F. ___	urinate without being aware of it
7.	Foley bag	G. ___	inflammation of the urinary bladder
8.	incontinent	H. ___	produce
9.	sterile	I. ___	tube from the kidney to the bladder
10.	urethra	J. ___	tube from the bladder to the outside of the body
11.	edema	K. ___	word meaning urinate
12.	nephritis	L. ___	external opening through which urine passes to the outside of the body
13.	meatus	M. ___	collects urine that has been drained through a catheter
14.	excrete	N. ___	word meaning kidney
15.	retention	O. ___	remove waste
16.	cystitis	P. ___	free of bacteria
17.	renal calculi	Q. ___	inflammation of the kidney
18.	hematuria	R. ___	lack of urine
19.	pyelogram	S. ___	blood in the urine
20.	anuria	T. ___	x-ray of ureters

LEARNING ACTIVITIES - concluded

ACTIVITY #5. Exercise - Urinary System

Fill in the correct answers to the following questions. Answers can be found in Module G. If you have any questions, ask your instructor.

1. When the bladder is full and the patient is unable to urinate, there is _______________ of the urine.

2. ______________________________ is the accumulation of water in the tissues under the skin.

3. A patient who constantly dribbles urine or urinates without being aware of it is ____________________.

4. You may help a patient who is retaining urine in the bladder by:

   a. ____

   b. ____

5. To relieve retention, the patient may need to be _________________________.

6. List three (3) things you may need to do for a patient who is incontinent:

   a. ____

   b. ____

   c. ____

7. A patient asks you what happens during catheterization. Using your own words, write what you would say. ______________________________

   ____

   ____

   ____

   ____

ANATOMY AND PHYSIOLOGY FOR HEALTH CARE WORKERS

MODULE H - Endocrine System

unit 4

RATIONALE

In order to understand why people react differently in similar situations, it is essential that you, as a health care worker, learn about the endocrine system, the ductless glands. The glands in this system secrete juices called hormones in the bloodstream. These hormones regulate how we grow or do not grow; how active or inactive we are; and they coordinate the functions of all cells, tissues, organs, and systems of the body.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify two of the three basic functions of the endocrine system.
2. Identify how the hormones are carried to all parts of the body.
3. Label six endocrine glands on a given diagram.
4. Identify characteristics for each of the six endocrine glands.
5. Identify symptoms related to the dysfunction of the six endocrine glands.
6. Identify one of the five duct glands.
7. Identify one function for one of the five duct glands.
8. Identify terms relating to the endocrine system.

LEARNING ACTIVITIES

Directions: All of the information you need to complete this module successfully is included in this section. The written activities are included to help you prepare for the Post Test and learn the information presented. You will be instructed what to do as you progress through the module. Always go to your instructor if you have any questions.

If there is a large diagram or model of the endocrine system available in the lab, use it to help you while you study this module.

LEARNING ACTIVITIES - continued

ACTIVITY #1. The Endocrine System

Directions: Read the following.

Endocrine glands are special tissues found in widely separated areas of the body. They are also called ductless glands or glands of internal secretion because their secretions go directly into the bloodstream. They produce chemicals called hormones which enter the bloodstream directly and are quickly carried to all parts of the body. Hormones regulate and control body activities and growth. Some of the endocrine glands secrete more than one hormone. There are six endocrine glands, some of which are in pairs. A few of these glands manufacture both an internal and an external secretion. One such gland, the pancreas, discharges its very important internal secretion, insulin, directly into the bloodstream. It also manufactures an external secretion, a limpid, colorless fluid that digests proteins, fats and carbohydrates, which it discharges through the pancreatic juice duct into the duodenum instead of directly into the bloodstream.

Structure and Function

There are six important endocrine glands or groups of glands in the body. The following is a list of these glands together with their location in the body:

Pituitary gland - in the skull

Thyroid gland - in the neck, below the "Adam's apple"

Parathyroid glands - near the thyroid gland

Pancreas - in back of the stomach

Adrenal glands - one over each kidney

Gonads - male and female sex glands (male, testes; female, ovaries)

The functions of the endocrine system and the nervous system are similar. Both provide communication and control. The difference is that the nervous system provides rapid, brief control via the fast-traveling nerve impulses, and the endocrine system provides slower, longer lasting control via the hormones secreted in the bloodstream.

As you proceed with this module and study each gland, you will learn how it functions in the body to:

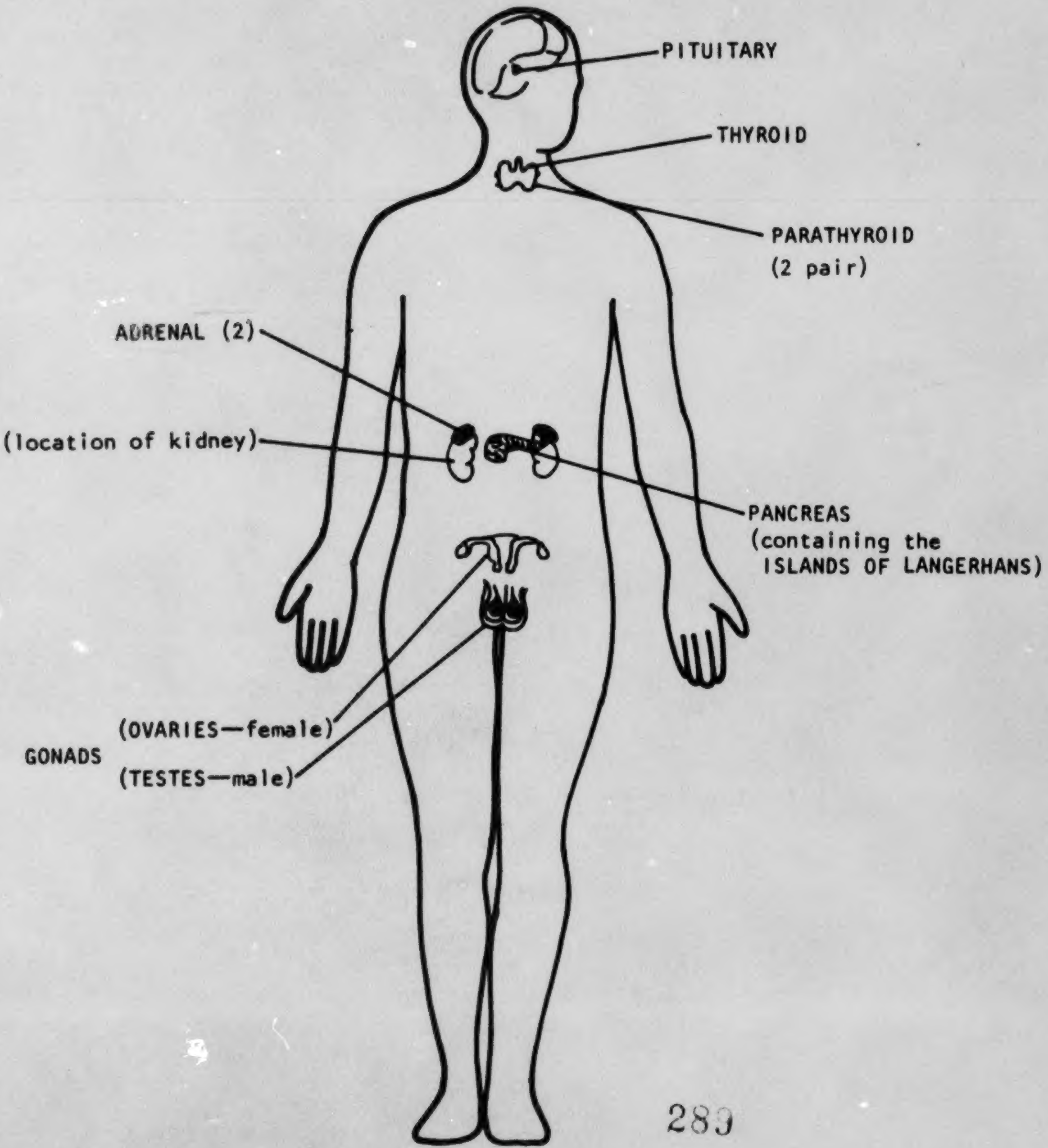
1. Regulate metabolism (growth development)
2. Effect reproduction
3. Help the body to handle stress

LEARNING ACTIVITIES - continued

The diagram below shows the location of all the endocrine glands. Study the diagram and learn the name and location of each of the six glands.

Adeno - (gland) is a prefix used frequently in material pertaining to health care and the study of the body.

ENDOCRINE GLANDS


PITUITARY
THYROID
PARATHYROID
(2 pair)
ADRENAL (2)
(location of kidney)
PANCREAS
(containing the
ISLANDS OF LANGERHANS)
GONADS
(OVARIES—female)
(TESTES—male)

LEARNING ACTIVITIES - continued

ACTIVITY #2. The Endocrine Glands - Functions and Disorders

Directions: Read the following.

The Pituitary Gland

The pituitary gland, a gland about the size of a pea, has two portions or lobes, each of which secretes more than one hormone. It is surrounded by cranial bone and located under the brain where it is well protected. The hormones secreted by this gland not only control growth, urine production, and contractions of involuntary muscles, but they also influence the activity of all the other glands. The other glands could not grow or produce their own hormones without this gland; therefore, the pituitary is often called the "master gland". The scientific name for the pituitary is "hypophysis".

The two lobes of the pituitary are identified as follows:

Anterior - adenohypophysis - the anterior (forward) or glandular (adeno) portion

Posterior - neurohypophysis - the portion situated toward the back of the gland, the nerve-like structure of the gland

Four main hormones are secreted from the anterior lobe. The names of these hormones all end with the suffix trophic, indicating that they pertain to the functions concerned in nutrition, digestion, and assimilation. Only two hormones are secreted from the posterior lobe. Study the following information to learn the names of these hormones and their functions in the pituitary gland.

1. Anterior Pituitary

   a. Thyrotrophic Hormone (TH)

      (1) stimulates the thyroid gland to grow

      (2) stimulates the thyroid gland to produce thyroxin

   b. Adrenocorticotrophic Hormone (ACTH)

      (1) stimulates growth and development of the adrenal cortex

      (2) stimulates the adrenal cortex to secrete its hormones

   c. Gonadotrophic Hormone (two different gonadotrophic hormones are secreted)

      (1) Follicle Stimulating Hormone (FSH)

         (a) stimulates the graafian follicles on the ovary to develop and mature

LEARNING ACTIVITIES - continued

        (b) stimulates the graafian follicles to produce estrogen
        (c) stimulates the tubules in the testes to form sperm
    (2) Luteinizing Hormone (LH)
        (a) stimulates the graafian follicles to develop so that ovulation occurs
        (b) stimulates the ovaries to produce estrogen and progesterone
        (c) stimulates the testes to produce testosterone

d. Somatotrophic Hormone (Growth Hormone)
    (1) stimulates normal growth
    (2) affects fat and carbohydrate metabolism

2. Posterior Pituitary
    a. Anti-Diuretic Hormone (ADH)
        (1) stimulates the kidney tubules to reabsorb H_2O thus decreasing the amount of urine produced
    b. Oxytocin
        (1) stimulates the contractions of the uterus before and after delivery

Malfunctioning of the pituitary hormones can cause disturbances which are discussed below.

Disorders of the Pituitary

1. Cushing's disease is due to hypersecretion of ACTH or adrenocorticotrophic hormones. It results in a puffy or fatty appearance of the face, neck, and trunk. It causes sexual dystrophy with amenorrhea in females and impotence in males.

2. Menstrual disturbances may occur from hypofunctioning of the Gonadotrophic hormones. Difficulty and inability to reproduce results from hormone levels insufficient to stimulate the testes for adequate sperm production as well as insufficient hormones to enable ovaries to cause ovulation.

3. Aeromegaly can result from hypersecretion of the somatotrophic hormone. An adult with enlarged hands, feet, jaws and cheeks reflects this condition. Hypersecretion of this hormone during the growth years may result in gigantism.

4. Dwarfism is due to an undersecretion of somatotrophic hormone during the growth years. Should an adult suffer decrease in this hormone there will be no effect of this kind.

LEARNING ACTIVITES - continued

5. Diabetes insipidus is the result of hypofunctioning of the antidiuretic hormone (ADH). This disease must not be confused with diabetes mellitus and it is characterized by larger urine production. The diabetes insipidus patient experiences thirst, weakness and dry skin because of the loss of body water.

Review Exercise

Directions: Answer the following questions about the pituitary gland. The answers can be found in the material you have studied in this module. If you have any problems or questions, ask your instructor to help you.

1. The word trophic refers to which lobe of the pituitary? ____________________

2. Name the four hormones produced by the anterior pituitary.

   a. ______________________________ c. ______________________________

   b. ______________________________ d. ______________________________

3. Name one function of the thyrotrophic hormone. ____________________

4. What do the letters FHS stand for? ______________________________

5. What is another name for the growth hormone? ____________________

6. The hormone which causes contractions of the uterus is ________________ .

7. Hypersecretion of ACTH results in which disease? ____________________

8. Hyperfunctioning of the somatotrophic hormone in an adult causes __________

   ____ .

9. Undersecretion of somatotrophic hormone during the growth years will result in

   ____ .

10. Hypofunctioning of ADH causes ______________________________ .

Thyroid Gland

The thyroid gland is located in the front of the neck. It has two lobes which wrap themselves around the trachea, below the Adam's apple. The thyroid gland secretes a hormone called thyroxin which regulates the body's metabolism rate. Metabolism affects the body's ability to burn food and thus generate energy. In short, thyroxin amounts determine the rate at which the body will burn food intake.

The thyroid cannot make thyroxin without iodine. Iodized salt is a means by which the body receives enough iodine for adequate thyroxin production. Drinking water in some parts of the country contains generous amounts of iodine while in other parts the drinking water has grossly insufficient amounts of iodine.

LEARNING ACTIVITIES - continued

Disorders of the Thyroid

Without enough iodine in the diet, the thyroid hypertrophies (enlarges) and a condition known as simple goiter results. Use of iodized salt has somewhat controlled this problem. Hypothyroidism (decreased production of thyroxin) occurs when the body cannot burn up the food taken in. A patient with Hypothyroidism becomes fat, sluggish, and slow because the food has not been burned up to create energy. Thyroid extract is effective in treatment of this condition.

Hyperthyroidism, Graves' disease, results in nervousness, rapid pulse, and weight loss. Such patients are restless, irritable and very sensitive to heat. A resultant increase in appetite and food intake does little to stem the weight loss unless adequate medical treatment is received.

The Parathyroids

These are four tiny glands embedded in the thyroid gland in the neck. The hormone they manufacture controls the body's use of two minerals, calcium and phosphorus.

Disorders of the Parathyroid

Disturbances in parathyroid gland function interfere with the body's use of calcium. During thyroid surgery, the surgeon must be extremely cautious not to remove the parathyroid glands along with the thyroid.

Hypofunction of the glands may cause tetany. This disease is marked by convulsive twitchings and could result in death. Vitamin D and calcium are given to restore normal balance.

Hyperfunction of the glands may cause an increase in calcium in the blood resulting in a tendency to crystallize in the kidneys as kidney stones.

Pancreas - Islands of Langerhans

The pancreas lies in the abdominal cavity behind the stomach. It contains within it groups of microscopic cells called the Islands of Langerhans. The Islands of Langerhans secrete a hormone, INSULIN, which controls the body's use of sugar by accelerating the movement of the glucose out of the blood into the cells of the body.

Disorders of the Islands of Langerhans

Disturbances can be caused by several factors such as:

a. Disease of the gland itself

b. Infections in other parts of the body

c. Dietary deficiences

When too much insulin is produced, more glucose than usual leaves the blood and results in a condition called hypoglycemia.

LEARNING ACTIVITIES - continued

When too little insulin is produced, too little sugar leaves the blood resulting in hyperglycemia or diabetes mellitus. Some excess sugar in the blood is usually excreted in the urine and can be tested with Clinitest tablets. Insulin can be given subcutaneously to help control the amount of sugar in the blood.

The Adrenal Glands

There are two adrenal glands, each located on one of the two kidneys. Each gland has two distinct portions, the cortex and medulla, each of which secretes separate hormones. In general, the adrenal hormones regulate the release of energy to meet emergencies as well as water and salt usage by the body.

1. Adrenal Cortex produces three hormones called corticoids.

    a. Glucocorticoids (called Hydrocortisone) enable cells to carry on metabolism of three kinds of foods -- proteins, fats, and carbohydrates. They also make cells. Thus hydrocortisone assists the body's resistance to stress.

    b. Mineralcorticoids help to control the mineral salts in the blood such as sodium and potassium. This helps to regulate fluid and electrolyte balance in the body.

    c. Androgens are male sex hormones which produce masculine characteristics.

2. Adrenal Medulla

    Epinephrine (adrenalin) and norepinephrine. These hormones react to stress when stimulated by nerve impulses. They enter the blood stream and help the body prepare for a stressful situation. The heart beats faster, blood pressure rises, and the blood contains more sugar for energy. Commonplace reference to this is preparation of the body for "fight or flight".

Disorders of the Adrenal Glands

Disturbances in the adrenal gland are usually caused by new growths in the gland increasing the amount of hormone production.

Cushing's syndrome is a disease caused by hypersecretion of glucocorticoids. Its most noticeable features are the so-called "moon face" and "buffalo hump" which develop from redistribution of body fat.

The Gonads

The term "gonads" refers to the male and female sex glands. The female glands are the two ovaries located within the pelvis on either side of the uterus. Stimulated by the pituitary gland, they produce two hormones, estrogen and progesterone. These hormones are responsible for the development of female characteristics: breast development, pubic and auxiliary hair, the onset and regulation of menstruation and pregnancy.

LEARNING ACTIVITIES - continued

The male gonads, the two testes, are located outside of the body in a pouch called the scrotum. They produce the hormone testosterone which is responsible for secondary male characteristics. These characteristics include muscular development, deepening voice and body hair growth.

The male and female gonads also produce the special cells sperm and ovum, which when united (fertilized) form a new person.

Disorders of the Gonads

The most common ovarian disturbances are caused by the existence of cysts, tumors, and menstrual disorders. Drastic changes occur at menopause due to termination of hormone secretions. Disturbances of the testes include tumors and sterility.

ACTIVITY #3. Exercise — Endocrine Glands

Directions: Fill in the blanks.

1. The thyroid gland is located in the ______________________________ .
2. The pituitary gland is also called the ________________ gland because it controls all of the other glands.
3. The gonads in the female are called __________________; and in the male they are called _________________.
4. The ovaries secrete hormones which give the female her feminine character and ________________________.
5. The testes secrete hormones which allow the male to produce male sex cells and gives him his ______________________________________ .
6. The pancreas is located behind the ______________________________ .
7. There are how many parathyroid glands? ___________________________
8. The parathyroid glands are located ____________________ the thyroid gland.
9. An adrenal gland is located on top of each ________________________ .

Directions: Circle the "T" if the statement is "TRUE" or "F" if it is "FALSE". The answers can be found in this module. If you have questions, ask your instructor.

1. T F The pituitary gland is located in the abdomen.
2. T F The thyroid gland helps us to burn food for energy.
3. T F The parathyroid glands help produce sex cells.
4. T F The islands of Langerhans secrete hormones which control our body's use of sugar.

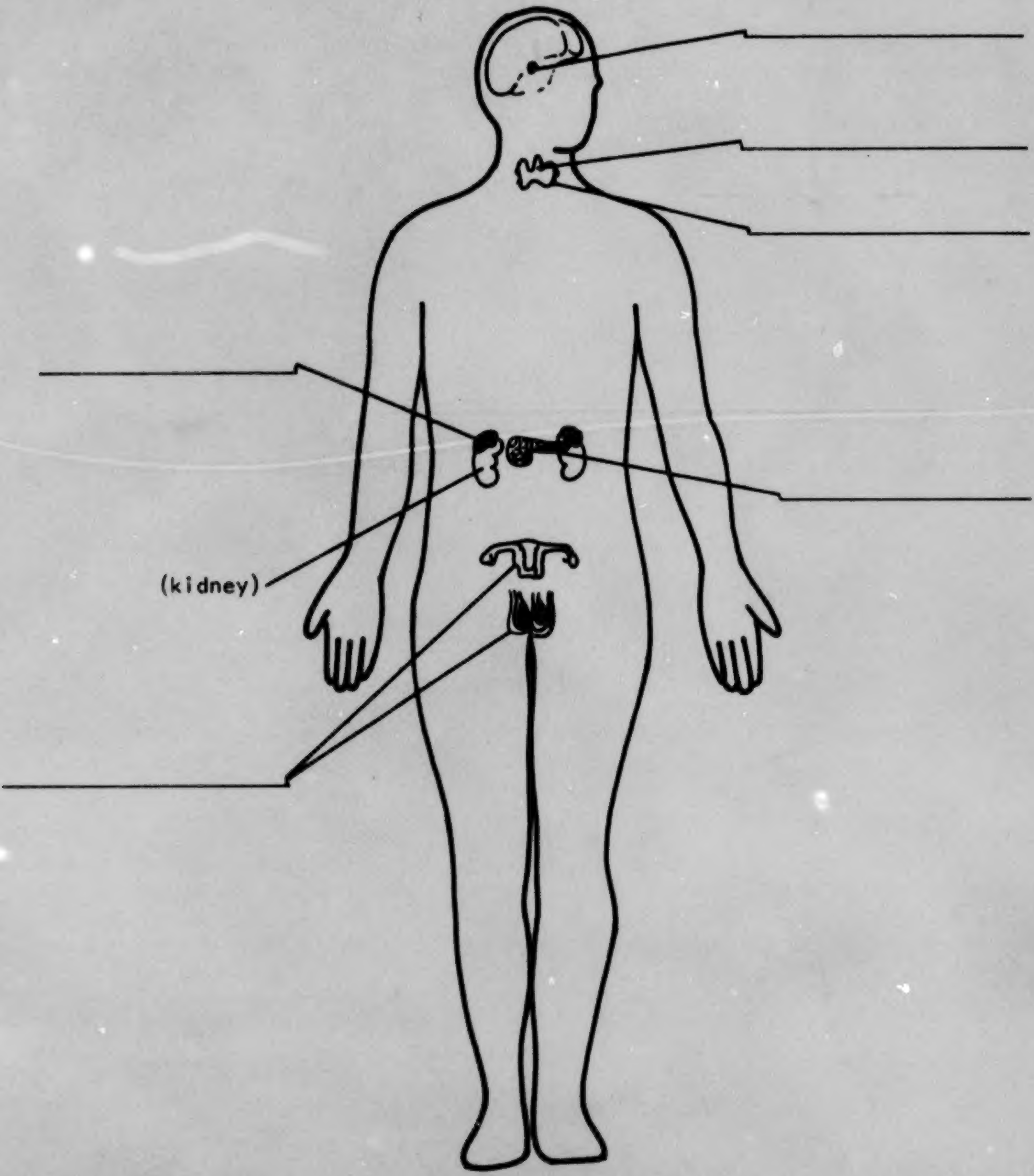
LEARNING ACTIVITIES - continued

5. T F The ovaries are located in the scrotum.

6. T F The testes are located in the pelvic cavity.

7. T F The adrenal glands help our bodies to handle stress.

Directions: On the following diagram label the six endocrine glands. Check your answers with the diagram on page 4.H.3.



LEARNING ACTIVITIES - continued

ACTIVITY #4. Exocrine Glands - The Duct Glands

Directions: Read the following.

Now that you have studied the endocrine glands, you should also learn about the exocrine or duct glands. The secretions from these glands reach an opening through a tube or a duct. Following is a list of the duct glands, the secretion they produce, and the function of these secretions:

GLAND	PRODUCT	FUNCTION
Lacrimal	Tears	Clean Eyes
Salivary	Saliva	Moisten Food
Liver	Bile	Aid Digestion
Pancreas	Digestive Juice	Aid Digestion
Sweat (Sudoriferous)	Perspiration (Sweat)	Cool Body

Exercise

Directions: Using the blank spaces provided after the following statements, tell which gland is causing the condition or symptom, and state whether the gland is an exocrine gland or an endocrine gland. Answers can be found in the material you have studied in this module.

1. A midget or giant. ______________________________
2. Suffers from body overheating. ______________________________
3. Constantly eating food, but remains thin. ______________________________
4. Makes food soft for swallowing. ______________________________
5. Suffers from diabetes (too much blood sugar). ______________________________
6. Need of sudden burst of power to win the race. ____________ , ____________
7. Eyes are dry and itchy. ______________________________

ACTIVITY #5. Ednocrine System - Terminology

Directions: Following are terms and definitions which you must know in order to complete the Post Test for this module.

1. ADENO - a prefix denoting a gland.
2. DUCT - a narrow tubular vessel or channel (all exocrine glands have ducts).
3. ENDOCRINE - secreting internally; any of the glands whose secretions pass directly into the bloodstream (the ductless glands).

LEARNING ACTIVITIES - continued

4. GLAND - a cell or group of cells which has the ability to manufacture a substance which is discharged and used in some other part of the body.
5. HORMONE - a chemical substance which is conveyed through the blood to another part of the body.
6. HYPERFUNCTION - increased amount of functioning.
7. HYPOFUNCTION - decreased amount of functioning.
8. METABOLISM - the burning of food for energy.
9. OVARIES - female gonads which produce estrogen and progestrone.
10. TESTES - male gonads which produce testosterone.

ACTIVITY #6. Exercise - The Endocrine System

Directions: Match the following. The answers can be found in the material you have studied in this module. If you have any problems or questions, ask your instructor to help you.

1. ___ Gland
2. ___ Follicle Stimulating Hormone
3. ___ Endocrine System
4. ___ The burning of food for energy
5. ___ Hormone
6. ___ Graves' Disease
7. ___ Muscle Spasms
8. ___ Islands of Langerhans
9. ___ Male Reproductive Glands
10. ___ Gonads
11. ___ Female Reproductive Glands

A. Same as Hyperthyroidism

B. A secretion or juice of an endocrine gland

C. Metabolism

D. Ductless glands which secrete juices or hormones directly into the bloodstream

E. FSH

F. Adeno

G. A hormone produced in the islands of Langerhans and helps the body to use sugar for energy

H. Pouch-like sac where testes are located

I. Pituitary gland

J. Tetany

K. Gland in pancreas which produces a hormone called insulin

LEARNING ACTIVITIES - continued

12. ____ Scrotum
13. ____ Insulin
14. ____ Master Gland

L. Testes
M. Male and female reproductive glands
N. Ovaries

Directions: Complete the following by filling in the blank spaces. All the answers are contained in the material you have studied in this module. If you need help, ask your instructor.

1. Name the master gland, its location, and the different lobes.

    ____

2. What endocrine gland secretes both an internal and external secretion?

    ____

3. When the thyroid gland hypertrophies, the condition is known as a ____________ ____________ and you need ______________________________.

4. What does the thyroid gland do? ______________________________

    ____

5. There are four glands called the ____________ that when they malfunction cause muscle spasms called ______________________________.

6. Name the female sex glands and the hormones produced. ____________

    ____

7. Name the male sex glands and the hormone produced. ____________

    ____

8. Name the six endocrine glands.

    a. ____________________ d. ____________________

    b. ____________________ e. ____________________

    c. ____________________ f. ____________________

9. The adrenal glands have the outer part called the ____________, and an inner portion called the ____________. What hormones do they produce? ________

    ____

LEARNING ACTIVITIES - concluded

10. What is an antidiuretic, and what does it do? What gland is responsible for the antidiuretic hormone? ______________________________

11. What gland regulates the rate of growth of the body? ______________________________

12. What conditions are present if a person has a hypofunction of the pituitary gland? ______________________________

13. What is the function of hormones? ______________________________

____

____

14. What is a hormone and how is it transferred through the body? ______________________________

____

____

____

ANATOMY AND PHYSIOLOGY FOR HEALTH CARE WORKERS

Module I - Reproductive System

RATIONALE

The Reproductive System provides for the continuance of the human race. It is important to know this system in order to understand the origin and development of a new being.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Label ten major organs of the male reproductive system on a given diagram.
2. Identify characteristics of the major organs of the male reproductive system.
3. Label six major organs of the female reproductive system on a given diagram.
4. Identify characteristics of the major organs of the female reproductive system.
5. Identify changes occurring during the menstrual cycle.
6. Identify the terms and process involved in fertilization.
7. Identify terms and conditions relating to the male and female reproductive systems.

LEARNING ACTIVITIES

Directions: All the information you need to complete this module successfully is included in the learning activities. The written activities are included to help you prepare for the Post Test and learn the information presented. You will be instructed what to do as you proceed with the module. Always go to your instructor if you have any questions. If a large diagram or model of the male and female reproductive systems is available in the lab, use it to help you while you study.

ACTIVITY #1. The Reproductive System

Directions: Read the following.

Both the male and female organs of reproduction have dual functions. They produce the hormones responsible for masculine and feminine characteristics and living cells, sperm and ovum, which unite to form a baby. The female also houses the new baby until birth. The purpose of the reproductive system is survival of the human race.

LEARNING ACTIVITIES - continued

Male Reproductive Organs - Structure and Function

The male reproductive system is divided into two parts, the external organs and the internal organs. The diagram at the bottom of page 3 of this module will help you locate these organs as they are explained.

External Organs of Reproduction

1. Scrotum - The scrotum is a pouch of loose skin which contains the testes.

2. Penis - The penis is an organ composed of a special kind of tissue called erectile tissue. This tissue contains many small spaces that usually are collapsed. Under the stimulus of sexual emotion, blood floods these spaces, distending them enough to cause enlargement and rigidity of the organ so that in the process of reproduction it may enter the vagina to deposit seminal fluid. The penis also protects the urethra.

   Loose fitting skin, the foreskin, covers the penis. The section of foreskin which covers the penis tip, the glans, is usually removed by surgical procedure called circumcision.

Internal Organs of Reproduction

A. Glands

1. Gonads (Testes or Testicles) - These glands produce sperm and secrete the male sex hormone testosterone which is responsible for the male sex characteristics. Millions of sperm are produced in the seminiferous tubules inside the testes. The process of producing sperm is called spermatogenesis. One sperm can join with an ova from the female for reproduction of a new being.

2. Seminal Vesicles - The seminal vesicles are glands located near the prostate gland which produce an alkaline secretion that constitutes the gelatinous fluid part of the semen. Semen is a liquid mixture of substances produced in the testes. Normally three to five ml, about one teaspoon, of semem is ejaculated at one time. Each ml contains over 60,000,000 sperm. The seminal vesicles join a narrow duct that joins with the vas deferens to form the ejaculatory duct. Semen can be stored in the vesicles until an ejaculation occurs in the man. An ejaculation is defined as the ejection of the seminal fluids from the male urethra. This is a reflex action usually occurring during the stimulation of sexual intercourse.

3. Prostate Gland - The prostate gland surrounds the first inch of the urethra below the bladder. It also secretes an alkaline fluid like the seminal vesicles so that sperm have a better chance of living and remaining fertile. Sperm cannot survive in an acid environment. The prostate gland causes considerable trouble in some older men when it sometimes enlarges and cuts off the flow of urine through the urethra.

LEARNING ACTIVITIES - continued

4. Cowper's Gland (Bulbourethral Gland) - There are two of these glands in the male reproductive system, one on either side of the urethra just below the prostate gland. These also add an alkaline secretion to the semen.

B. Ducts

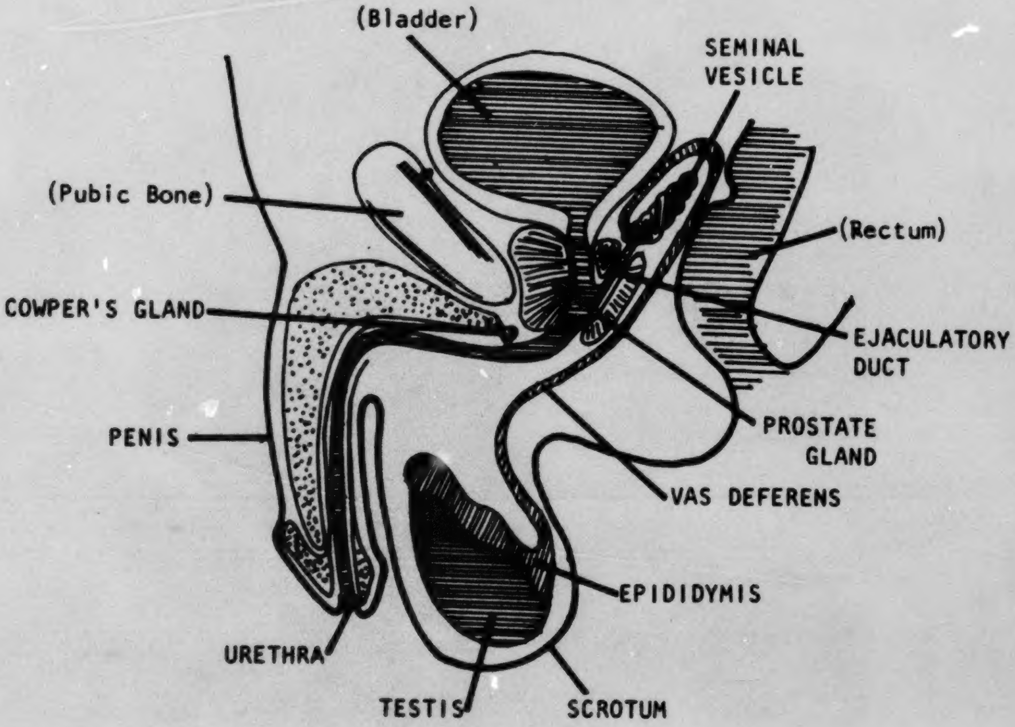
1. Epididymis - This is a coiled tube 20 feet long which lies on top of each testes. The sperm travel from the seminiferous tubules, where they are made, through the epididymus.

2. Vas Deferens (The Seminal Duct) - This duct passes into the pelvic cavity behind the bladder and joins the seminal vesicles which, as stated earlier, can store the semen and sperm until an ejaculation occurs.

3. Ejaculatory Duct - The ejaculatory duct is a tube where the seminal vesicles and vas deferens meet so that the semen can go out through the urethra. Location of this duct is shown on the diagram below.

4. Urethra - The urethra transports both urine and semen to the outside, but the two cannot mix.

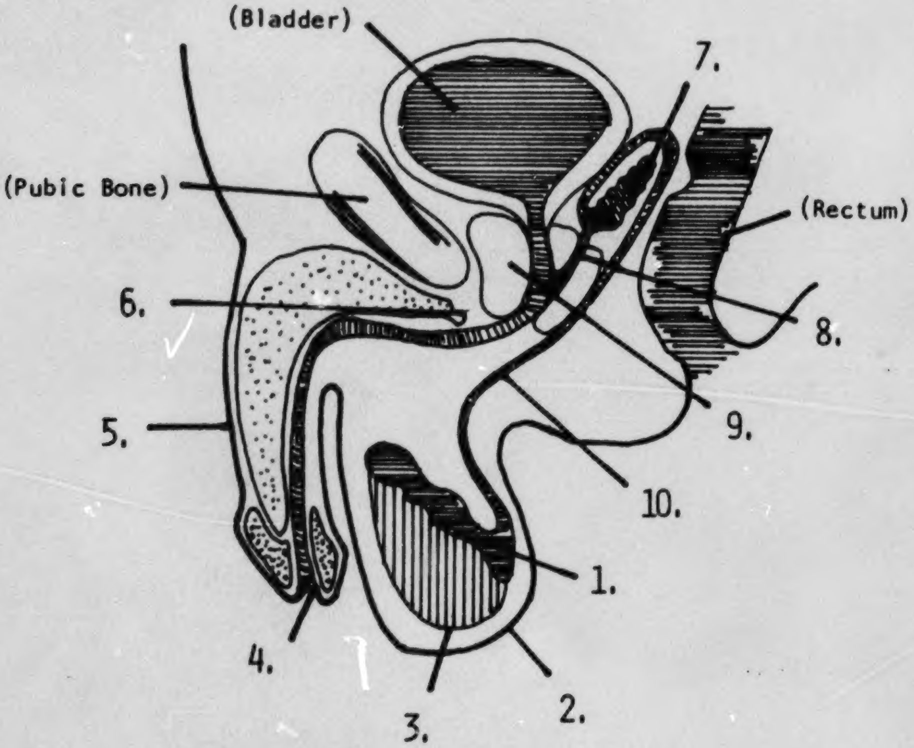
MALE REPRODUCTIVE SYSTEM


(Bladder)
SEMINAL VESICLE
(Pubic Bone)
(Rectum)
COWPER'S GLAND
EJACULATORY DUCT
PENIS
PROSTATE GLAND
VAS DEFERENS
EPIDIDYMIS
URETHRA
TESTIS
SCROTUM

LEARNING ACTIVITIES - continued

Directions: Label the following diagram to show the location of the major male reproductive organs.

MALE REPRODUCTIVE SYSTEM



Check your answers with the diagram on the preceding page of this module.

Directions: Fill in the blanks with the correct word. You can find the answers in the material you have studied in this module.

1. Produces sperm. ______________________________
2. Pouch that contains the testes is called ______________________ .
3. A small gland lying below the prostate gland which produces a substance that mixes with sperm to form semen. ______________________
4. The duct that lies over each testis. ______________________
5. Another name for the vas deferens. ______________________
6. Duct which passes sperm from vas deferens to the urethra. ____________

LEARNING ACTIVITIES - continued

7. Duct which also empties urine from the bladder. ______________________

8. Protects urethra. ______________________

ACTIVITY #2. Female Organs

Directions: Read the following.

The Female Organs: Structure and Function

The female internal organs are the ovaries, fallopian tubes (oviducts), uterus, and vagina. The external genitalia called the vulva, is made up of two liplike structures, the labia majora and labia minora. When the labia are separated, other external structures may be seen: the clitoris, the urinary meatus, and the vaginal opening. The hymen, a mucus membrane, separates the internal organs from the external. The hymen is usually broken when a woman first experiences intercourse, but it can be broken in other ways, for example, by strenuous horseback riding.

External Organs

Vulva

1. Labia Majora - the larger of two folds of skin which protect the vaginal opening.

2. Labia Minora - consists of two thin folds which lie within the labia majora.

3. Clitoris - an erectile structure which is comparable with the penis in the man. It is highly sensitive in responding to sexual excitement, and is hidden by the anterior ends of the labia minora. It is about one inch in length.

4. Bartholin's Glands - lie to the right and to the left of the vaginal outlet. They secrete a lubricating fluid. Their ducts open into the space between the labia minora and the hymen.

Breasts

The breasts are two mammary glands, the purpose of which is to secrete milk. They are located on the anterior chest wall. These develop at puberty but they do not produce milk until pregnancy occurs. Ducts from the glandular cells drain into a central duct which opens into the nipple. The slightly darker tissue surrounding the nipple is called the areola.

Internal Organs

1. Vagina - the passageway for menstrual flow to the outside; it is the female intercourse organ.

LEARNING ACTIVITIES - continued

2. Uterus - The uterus is a hollow, pear-shaped organ which has two parts: (1) the body, and (2) the cervix. The fallopian tubes enter the uterus at the top portion of the body, the fundus. The uterus has three functions:

   a. To make menstruation possible by the sloughing away of the endometrial lining, if pregnancy does not occur.

   b. To enable the embryo to implant in the endometrial lining if fertilization occurs.

   c. To expel the fetus during the contractions of labor.

3. Fallopian Tubes - There are two fallopian tubes. One end of each tube is connected to the uterus; the other end is funnel-shaped and opens into the pelvic cavity. The tubes are not connected to the ovaries, but, during ovulation, the ovum travels through the fallopian tube down into the uterus. Fertilization, the union of sperm and ovum, occurs in one of the tubes. The fertilized ovum then travels to the uterus where it is implanted in the endometrial lining.

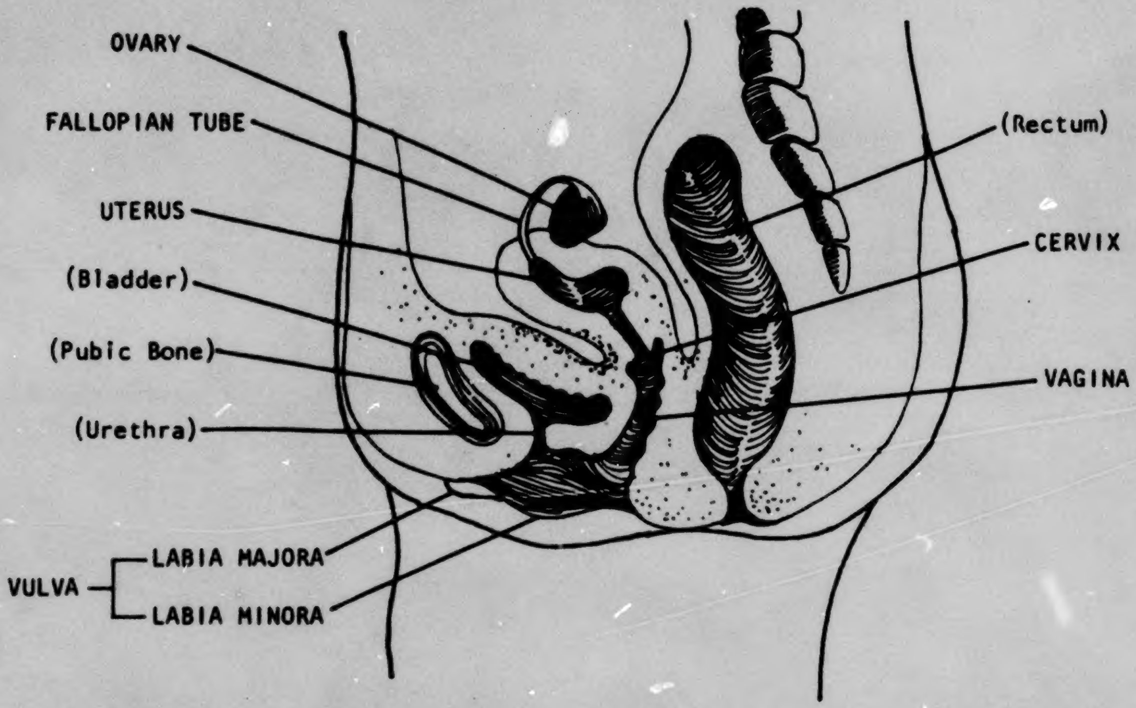
4. Ovaries - These two egg-shaped organs produce the egg, ovum, needed for reproduction. They also produce the two female hormones, estrogen and progesterone. Several thousand microscopic sacs called graafian follicles make up each ovary. Within each follicle lies an ovum, the female sex cell. The follicles secrete estrogen and are stimulated to produce the estrogen by the follicle-stimulating hormone FSH from the anterior pituitary. (You can review this information in Module H of this unit, The Endocrine System.) The other hormone from the anterior pituitary, LH (leuteinizing hormone), causes the follicle to mature, resulting in ovulation. After ovulation, the empty sac is referred to as the corpus luteum. It is this sac that produces the progesterone during the last fourteen days of the menstrual cycle. The estrogen and progesterone from the ovary would not be produced without stimulation from FSH and LH from the anterior pituitary.

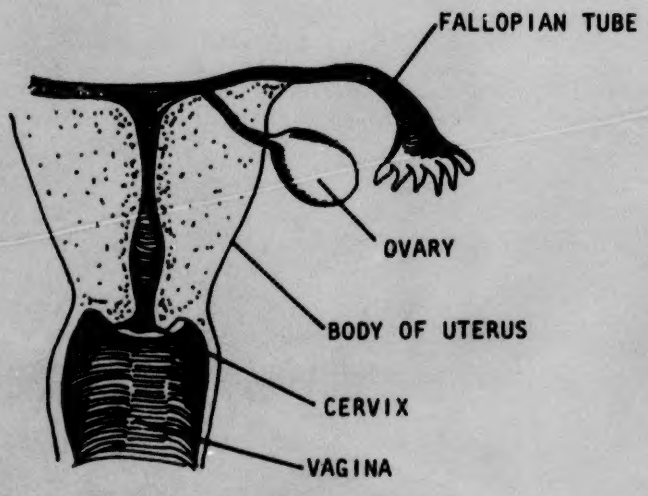
   Birth control pills contain estrogen substances which suppress FSH secretion in the anterior pituitary. Because FSH is not secreted from the pituitary, the follicle does not mature and, therefore, there is no ovulation.

LEARNING ACTIVITIES - continued

Directions: Study the following diagram and observe the location of the major female reproductive organs.

FEMALE REPRODUCTIVE SYSTEM

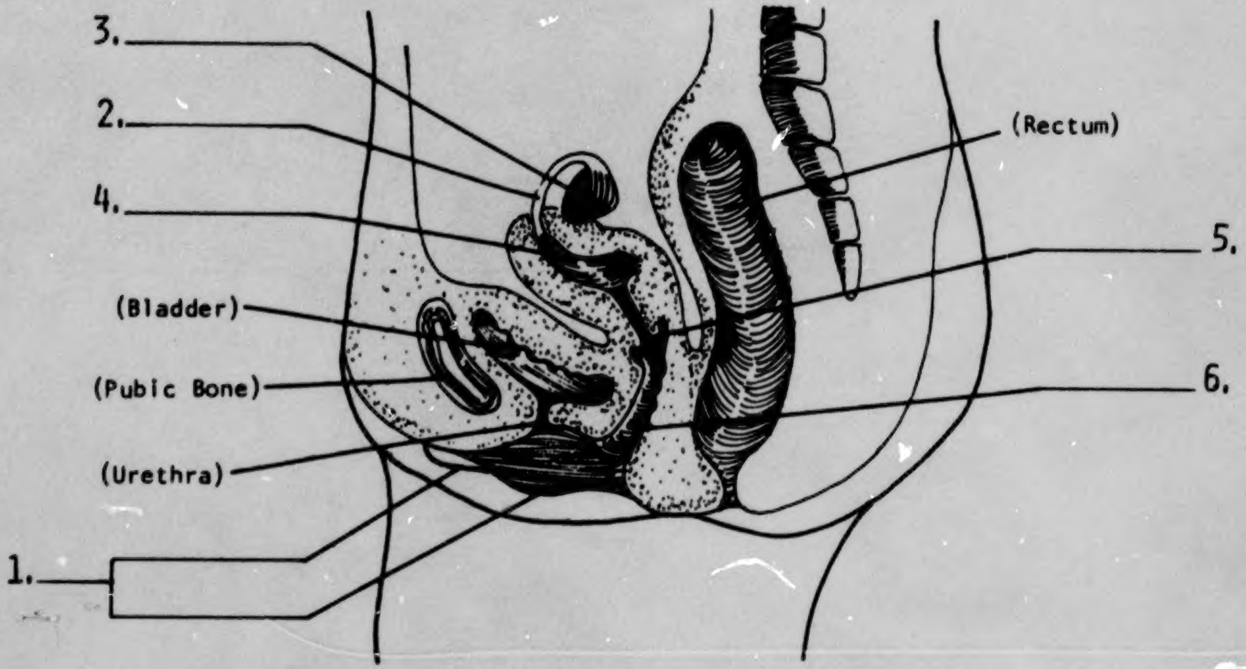

OVARY
FALLOPIAN TUBE
UTERUS
(Bladder)
(Pubic Bone)
(Urethra)
VULVA
LABIA MAJORA
LABIA MINORA
(Rectum)
CERVIX
VAGINA

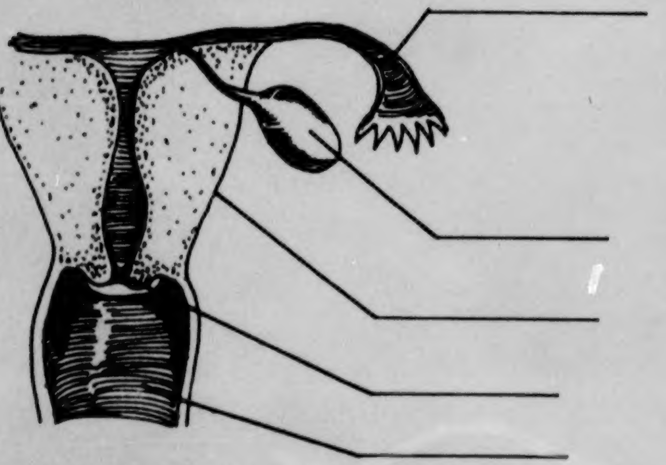

FALLOPIAN TUBE
OVARY
BODY OF UTERUS
CERVIX
VAGINA

LEARNING ACTIVITIES - continued

Directions: Label the following diagram of the Female Reproductive System. Compare your answers with the diagram on the preceding page of this module.

FEMALE REPRODUCTIVE SYSTEM


3.
2.
4.
(Bladder)
(Pubic Bone)
(Urethra)
1.
(Rectum)
5.
6.



LEARNING ACTIVITIES - continued

Directions: Fill in the blanks with the correct word or words. The answers can be found in the material you have studied in this module.

1. Fertilization normally occurs in ______________________ .
2. The larger folds of skin that protect the vaginal opening are called __________ ____________________ .
3. Menstruation, pregnancy and labor are made possible by the ______________ .
4. ________________ produces the ova.
5. _____________ glands produce and secrete a lubricating fluid.
6. The female organ of intercourse is the ______________________ .
7. The membrane which separates the external from the internal female organs is the ____________________ .
8. The erecticle tissue which is compared to the male penis is called the ________ ____________________ .
9. ____________ produce milk in pregnancy.
10. The lining of the uterus where a fertilized ova is implanted is called the _____ ____________________ .

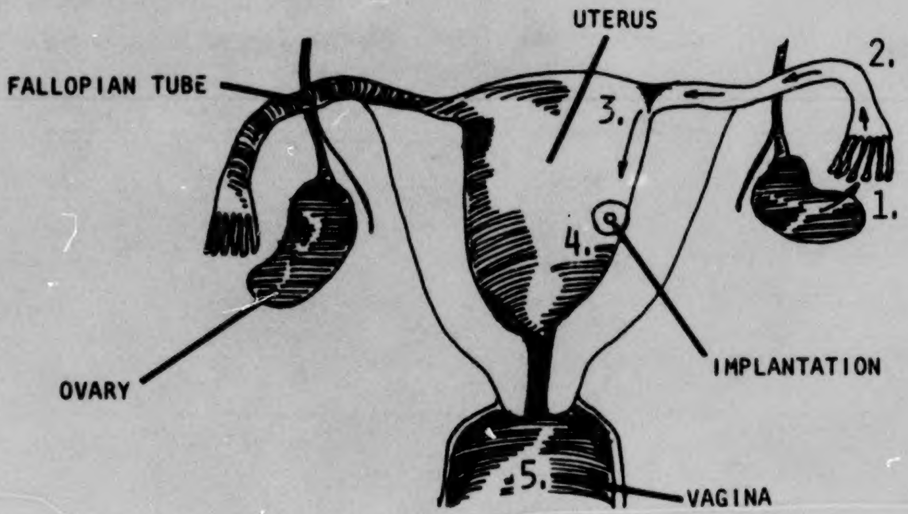
ACTIVITY #3. Menstrual Cycle

Directions: Read the following. Included in the material is a numbered diagram. Follow this diagram as you study this section.

The Menstrual Cycle

A series of activities called the menstrual cycle takes place in the uterus every 28 days. Once each month, (1) an ovum is released from the ovary; (2) it finds its way up into the fallopian tube; (3) it wiggles and squirms itself toward the uterus, and, at the same time, the ovary produces progesterone which thickens the inner lining of the uterus (the endometrium) in case the ovum (the egg) is fertilized by the sperm. If fertilization occurs, (4) the ovum is implanted in the thickened endometrium where it grows into a fetus (an unborn child). If fertilization does not occur, (5) the thickened endometrium falls away. This process is called the menstrual period or flow; it lasts for about five days. During the nine days following the end of the menstrual flow, estrogen repairs the endometrium until the next ovum is released.

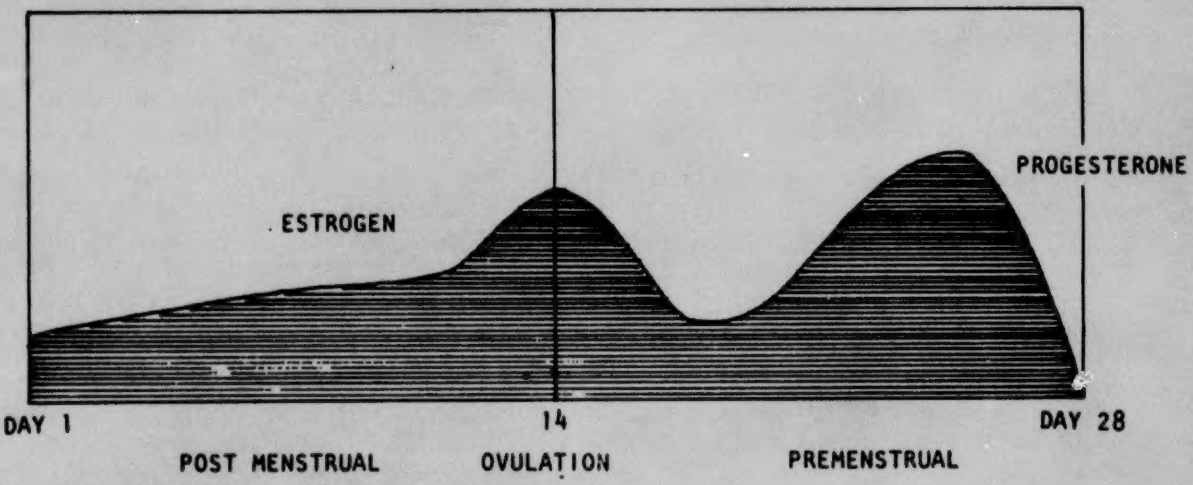
LEARNING ACTIVITIES - continued



MENSTRUATION

MENSTRUATION	REBUILDING OF THE UTERINE LINING COILED ARTERIES AND GLANDS	MENSTRUATION
DURATION DAYS 1 - 5	(9 Days).......14 (Ovulation) 28	1 - 5

The ripe ovum is set free about fourteen days after the menstrual flow. This is known as ovulation. The next 14 days, the endometrium continues to thicken for the fertilized ovum.



In order to fertilize an ovum or become pregnant, ovulation must occur. In other words, a mature ovum is required. A woman is most fertile (capable of reproduction) in the middle of her menstrual cycle, which is day number fourteen; the further away from day number "14", the least likely she is to become pregnant. This cycle occurs from puberty, sexual maturity, to menopause which usually occurs at about age 50.

LEARNING ACTIVITIES - continued

Review Exercise

Directions: Fill in the blanks. The answers can be found in the material you have studied in this module.

1. Once a month an __________ is released from the ____________, finds its way into the fallopian tube, and wiggles and squirms itself into the ______________.

2. The ovary produces __________ which thickens the ________________. If fertilization occurs, the ovum is planted into the thickened ________________ and it grows into a _______________________.

3. If fertilization does not occur, the thickened endometrium falls away. This is known as the _______________ _________________.

4. During the nine days following the end of the menstrual flow, the hormone _______________ repairs the endometrium until the next ovum is released.

5. When the ripened ovum is released, it is called _________________________ .

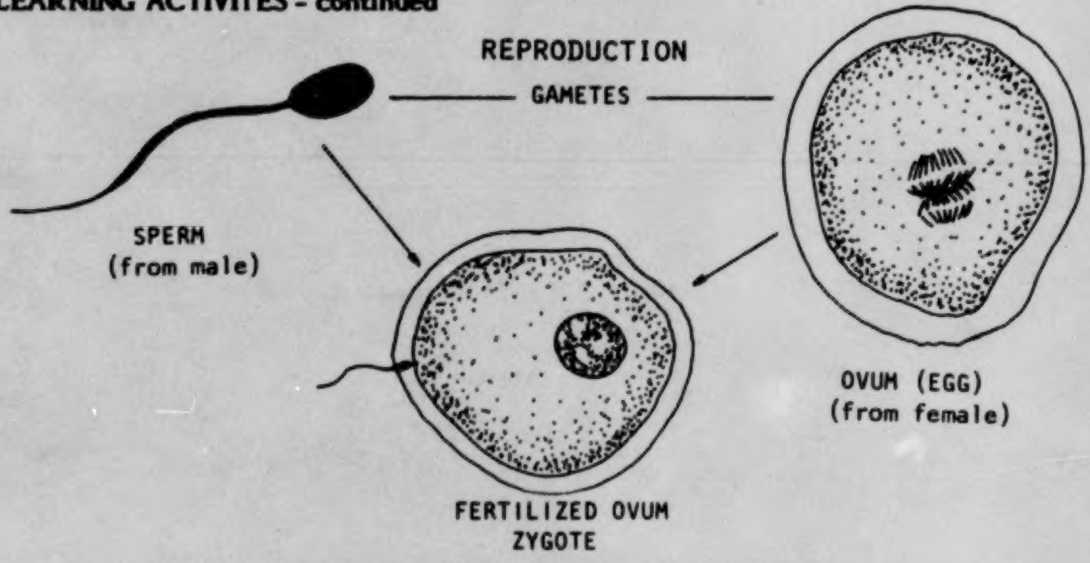
ACTIVITY #4. Process of Reproduction

Directions: Read the following.

The diagram on the following page shows what occurs during reproduction. As you can see from the diagram, the term given to the fertilized ovum is zygote. From the second until the eighth week, it is called an embryo and from the ninth week until birth it is called a fetus. It takes only one sperm to fertilize the ovum; however, as stated earlier, each ml of semen contains over 60,000,000 sperm.

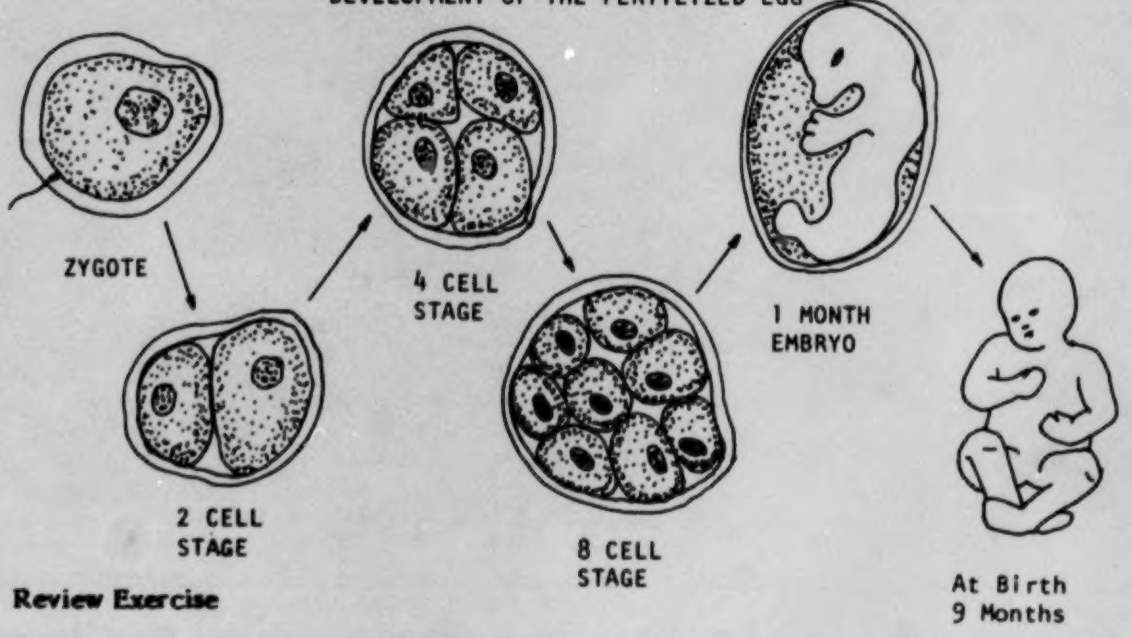
The fertilization of the female egg by the sperm usually takes place in the fallopian tube. This egg then travels to the uterus where it is implanted and grows. Occasionally implantation will occur in a location other than the correct one. When this occurs, it is called an ectopic pregnancy. An ectopic pregnancy may occur in the fallopian tube or in the abdominal cavity. These pregnancies must be terminated surgically.

LEARNING ACTIVITES - continued


REPRODUCTION
GAMETES
SPERM
(from male)
OVUM (EGG)
(from female)
FERTILIZED OVUM
ZYGOTE

FERTILIZATION—THE UNION OF SPERM AND EGG

DEVELOPMENT OF THE FERTILIZED EGG


ZYGOTE
2 CELL
STAGE
4 CELL
STAGE
8 CELL
STAGE
1 MONTH
EMBRYO
At Birth
9 Months

Review Exercise

Directions: Identify the following. The answers can be found in the material you have studied in this module.

1. Cell with whip-like process for movement is a ______________________.
2. Cell resulting from union of male and female gamete is a ______________.
3. Fertilized egg or cell from two weeks to eight weeks is an _____________.
4. Cell from nine weeks to birth is a ______________________________.

LEARNING ACTIVITIES - continued

ACTIVITY #5. Reproductive System Terminology

__Directions:__ Read the following.

Following are terms relating to the Reproductive System. You must know these for the Post Test on this module.

1.	TESTOSTERONE:	Male sex hormone.
2.	ESTROGEN:	Female sex hormone which causes repairs in the endometrium until next ovum (egg) is ripe.
3.	PROGESTERONE:	Female sex hormone which thickens the endometrium.
4.	FERTILIZATION:	Unionization of sperm and ovum.
5.	ENDOMETRIUM:	Inner lining of the uterus.
6.	OVULATION:	Ripening and discharge of an ovum by the ovary.
7.	MENSTRUAL CYCLE:	A series of changes in the uterus which take place every 28 days.
8.	LACTATION:	Secretion of milk.
9.	MENSTRUATION:	Process in which thickened endometrium is expelled.
10.	GYNECOLOGY:	Study of the diseases of the female.

Terms - Surgical Procedures

1.	VASECTOMY:	Removal of all or part of the vas deferens; produces sterility in the male.
2.	SALPINGECTOMY:	Removal of a fallopian tube.
3.	OOPHORECTOMY:	Removal of an ovary.
4.	SALPINGO-OOPHORECTOMY:	Removal of a fallopian tube and an ovary.
5.	ORCHIECTOMY:	Removal of a testicle.
6.	MASTECTOMY:	Removal of a breast.
7.	CIRCUMCISION:	Removal of the foreskin of the penis.
8.	TUBAL LIGATION:	Tying the fallopian tubes to prevent fertilization.

LEARNING ACTIVITIES - continued

Terms - Diseases/Conditions

1.	MASTITIS:	Inflammation of the breast.
2.	SALPINGITIS:	Inflammation of the fallopian tube.
3.	ENDOMETRITIS:	Inflammation of the inner lining of the uterus.
4.	PROSTATITIS:	Inflammation of the prostate gland.
5.	VENEREAL DISEASE:	A disease acquired through sexual intercourse.
6.	SYPHILIS:	A form of venereal disease characterized by lesions (changes in structure of an organ or part, caused by disease).
7.	GONORRHEA:	A form of veneral disease accompanied by inflammation of the genital mucosa.
8.	DYSMENORRHEA:	Difficult or painful menstruation.
9.	AMENORRHEA:	Absence of menstruation.
10.	MENORRHAGIA:	Excessive menstrual flow.

ACTIVITY #6. Exercise - Terminology Related to the Reproductive System

Directions: Complete this exercise. Circle the correct letter or answer to the statements. Answers can be found in the material you have studied in this module.

1. Removal of a fallopian tube is called:
   a. salpingectomy
   b. oophorectomy
   c. orchiectomy

2. Inflammation of the inner-uterine lining is called:
   a. mastitis
   b. endometritis
   c. syphilitis

3. Ripening and release of a mature ovum is called:
   a. fertilization
   b. ovulation
   c. lactation

LEARNING ACTIVITIES - continued

4. A male sex hormone is:

   a. estrogen
   b. progesterone
   c. testosterone

5. Secretion of milk is called:

   a. lactation
   b. ovulation
   c. menstruation

6. Surgical removal of a testicle is called:

   a. oopherectomy
   b. orchiectomy
   c. circumcision

7. Inflammation of the breast is called:

   a. mastitis
   b. salpingitis
   c. prostatitis

8. Exececssive menstrual flow is called:

   a. amenorrhea
   b. menorrhagia
   c. dysmenorrhea

9. A disease acquired through sexual intercourse:

   a. venereal disease
   b. endometritis
   c. salpingitis

10. Painful or difficult menstruation is called:

   a. dysmenorrhea
   b. menorrhagia
   c. amenorrhea

LEARNING ACTIVITIES - continued

ACTIVITY #7. Exercise - Reproductive System

Directions: Circle the letter in front of the correct word to complete the following statements. The answers can be found in the material you have studied in this module.

1. The lining of the uterus is called the:

   a. endometrium
   b. myometrium
   c. menstruation
   d. endometriosis

2. The process when the ovary discharges an ovum is called:

   a. menstruation
   b. pregnancy
   c. ovulation
   d. endometriosis

3. The union of the ovum and the sperm is called:

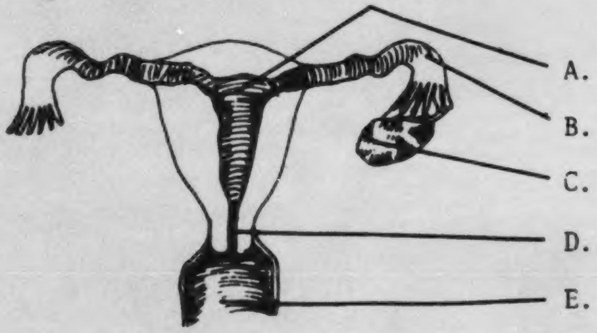
   a. unionovation
   b. fertilization
   c. contraction
   d. ejaculation

4. The normal menstrual cycle is:

   a. 5 days
   b. 12 - 14 days
   c. 30 days
   d. 28 days

5. In the accompanying diagram, the letter "B" refers to the:

   a. uterus
   b. vagina
   c. cervix
   d. fallopian tube



6. Menstruation is the shedding of unneeded:

   a. endometrium
   b. myometrium
   c. ovum
   d. menarche

LEARNING ACTIVITIES - continued

7. The testes are suspended in a sac called the:

   a. bulbourethral gland
   b. scrotum
   c. bag
   d. prostate

8. Testosterone is secreted by the:

   a. prostate
   b. seminal vesicle
   c. epididymis
   d. testes

9. The female sex cell is called:

   a. estrogen
   b. ovum
   c. progesterone
   d. gonad

Directions: Fill in the blanks.

10. The organ where fertilization occurs is ________________________________ .

11. When does ovulation occur in an average 28-day cycle? ____________________ .

12. The new cell formed upon fusion of the two sex cells is __________________ .

13. Two glands which produce milk following pregnancy are __________________ .

14. The tube which joins the uterus and opens into the pelvic cavity is __________

    ______________ .

15. FSH stand for ____ .

ANATOMY AND PHYSIOLOGY FOR HEALTH CARE WORKERS

Module J - Nervous System and Special Senses

RATIONALE

It is necessary to study and to learn the Nervous System in order to understand how messages are sent from the brain to all parts of the body and from parts of the body to the brain. These messages cause movement to body parts that can be controlled; for example, the arms and legs. There are, however, movements that cannot be controlled. An example of this is the action of the heart and lungs. Autonomic Nervous System is the term used to identify this particular type of body action. Through the Nervous System we are able to experience touch, smell, sight, taste and hearing. Without this system, there would be no memory, no emotion, and learning would be impossible. For easy understanding, this module is divided into three sections:

J1 - The Nervous System

J2 - The Eye

J3 - The Ear

NERVOUS SYSTEM AND SPECIAL SENSES

Module 31 - Nervous System

RATIONALE

Study of the Nervous System reveals how the body is controlled. To clarify the information, the student must be able to relate certain functions to different locations in the body.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify the parts of the central nervous system and identify one function for each part.
2. Identify one function for each of the three major areas of the brain.
3. Identify one function for two of the four parts of the cerebrum.
4. Identify the number of peripheral nerves and determine the basic function for each of these nerves.
5. Identify one function for each part of the autonomic nervous system.
6. Label the five major parts of the nervous system on a given diagram.
7. Identify the pathway for a nerve impulse identifying the structures involved.
8. Identify terms and conditions relating to the nervous system.

LEARNING ACTIVITIES

Directions: All the information you need to complete this module successfully is included in the learning activities. The written activities are included to help you prepare for the Post Test and to help you learn the information presented. You will be instructed what to do as you proceed with the module. Always go to your instructor if you have any questions. If there are large diagrams available of the nervous system and special senses, use them to help you as you study.

ACTIVITY #1. The Nervous System

Directions: Read the following.

The nervous system controls and coordinates all voluntary and involuntary body activities, even the production of hormones. Sensory receptors of the nervous system, such as the eye and the ear, enable the individual to be aware of his surroundings. Special parts of the nervous system are concerned with maintaining normal voluntary day-to-day functions while other parts become involved in emergency situations.

LEARNING ACTIVITIES - continued

The basis of the nervous system is the cell. The nerve cell or neuron is specially constructed to carry out efficiently its function of communication.

All cells have the ability to respond when stimulated. They also pass from cell to cell the reaction to the stimulus. We call these characteristics -- irritability and conductivity. To define them more exactly:

IRRITABILITY is the ability to react when stimulated.

CONDUCTIVITY is the ability to transmit a disturbance to distant points.

The nervous system consists of three main parts:

The COLUMNAR CENTRAL NERVOUS SYSTEM - Brain and spinal cord.

The PERIPHERAL NERVOUS SYSTEM - Cranial nerves (12 pairs)
Spinal nerves (31 pairs)

The AUTONOMIC NERVOUS SYSTEM - Ganglia on either side of spinal cord.

Where decision is needed and the person must think about an action, the central and peripheral nervous systems convey the message to the brain and carry back to the organs or muscles whatever command the brain gives.

The autonomic nervous system supplies the heart muscle, smooth muscles of the blood vessels, digestive organs, and other organs and glands with nervous impulses as needed.

For easier study, the nervous system will be divided into two parts, the brain and the spinal cord. The nervous system, however, is one interwoven system, a complex of millions of nerve cells. It controls all voluntary and involuntary activities of the body as briefly explained in the Rationale of Module J.

Directions: The following list of terms should be learned now as they are necessary for adequate understanding of the module, and may be found in Module J1 Post Test.

1.	CEREBROSPINAL FLUID:	A water cushion which protects the brain and spinal cord from shock. It is formed in the ventricles of the brain.
2.	GANGLIA:	A group of nerve cell bodies usually located outside the brain and spinal cord.
3.	INVOLUNTARY:	An uncontrollable function such as the heartbeat, breathing, or digestion of food.
4.	MENINGES:	These are three membranes which cover the brain and spinal cord. The three layers are the dura mater, the arachnoid layer where cerebrospinal fluid circulates, and the pia mater.

LEARNING ACTIVITIES - continued

5.	MOTOR:	Conveying impulses from reflex or central control centers (brain) to the sense organs (same as efferent).
6.	NEURON:	The name for the complete nerve cell in the nervous system.
7.	NERVE:	A group of neurons which connect the spinal cord and the brain to various parts of the body.
8.	PERIPHERAL:	Outer part or at a distance from the central part of the body. Examples are: arms, legs, skin, etc.
9.	REFLEX:	An involuntary response to a stimulus. An example is the sudden pulling away of the hand from a hot object.
10.	SENSORY:	Conveying impulses from sense organs to the reflex or higher centers (same as afferent).
11.	VENTRICLES:	Small cavities or spaces in the brain in which cerebrospinal fluid is formed.
12.	VOLUNTARY:	A controllable function such as arm movement.

ACTIVITY #2. The Central Nervous System (CNS)

Directions: Read the following.

The CNS is composed of the brain and the spinal cord which are one continuous structure. It functions as the reception center for messages from the peripheral body parts and for senses and for thoughts. These vital parts of the CNS (the brain and spinal cord) are surrounded by bone and a tough membraneous covering called Meninges. Further protection is provided by the cushioning effect of the cerebrospinal fluid.

The Brain

The brain consists of three main parts.

A. CEREBRUM - The largest portion of the brain is called the cerebrum. The outer portion is formed in folds known as convolutions and separated into lobes which take their name from the skull bones that surround them. The outer portion, the cerebral cortex, is composed of cell bodies and appears gray. The inner portion, the medulla, is white. All mental activities, such as thinking, emotions, voluntary movements, and interpreting sensations, are carried out by cerebral cells. Particular activities are centered in each lobe. The four lobes are:

1. Frontal - controls emotions and personality, the interpretation of pain and consideration of ideas.

2. Parietal - controls motor activity, fine sensory stimuli, and touch or pressure.

LEARNING ACTIVITIES - continued

3. Temporal - interprets auditory impulses, word formation and choice of words.

4. Occipital - interprets visual impulses.

The cerebrum also controls the opposite side of the body. The right side of the cerebrum controls the left side of the body and the left side of the cerebrum controls the right side of the body. For example, with a severe head injury on the right side of the head, the arm and leg on the left side of the body might be impaired.

B. CEREBELLUM - This is the second largest portion of the brain and lies under the occipital lobe of the cerebrum. It also has two layers, gray matter for the outer layer and white matter for the inner layer. The functions of the cerebellum are to:

1. Produce smooth coordinated movements.

2. Maintain equilibrium and balance in order to stand in an upright position.

C. BRAIN STEM--MEDULLA - This is the bulb-like extension of the spinal cord which lies just inside the cranial cavity in the occipital bone. It is the most vital portion of the entire brain because it controls all involuntary vital functions. It contains the following vital centers:

1. Respiratory center

2. Cardiac center

3. Vasomotor center

All sensory and motor neurons cross over in the medulla; thus, the right side of the body is controlled by the left side of the brain and vice versa.

An injury or disease of the medulla may be fatal. For example, a sharp blow to the base of the skull often results in death due to damage of the medulla and the respiratory center.

Two other areas of the brain should be mentioned. They are the thalamus and the hypothalamus. The thalamus is located in the cerebrum and serves as a relay station for sensory impulses and control of emotions. The hypothalamus lies directly under the thalamus. Its function is vital in many areas. For example:

1. Intestines (peristalsis)

2. Bladder control

3. Appetite

4. Wakefulness

LEARNING ACTIVITIES - continued

When discussing the spinal cord, it is necessary to study the meninges and cerebrospinal fluid.

The meninges are divided into three important tissue layers:

1. Dura mater - strong fibrous tissue
2. Arachnoid membrane - the area between these membranes is filled with cerebrospinal fluid which serves as the cushion for further protection of the brain and spinal cord.
3. Pia mater - this is a transparent membrane lying close to the brain and spinal cord.

The cerebrospinal fluid is produced in four ventricles or spaces located in the cerebrum. It is formed from the blood in the capillaries of the ventricles. The cerebrospinal fluid flows all around the brain and spinal cord, in one continuous pathway.

Hydrocephalus in infants results from overproduction of cerebrospinal fluid causing an enlarged head. This excess fluid can now be drained off through a surgical procedure, saving such infants lives.

The Spinal Cord

A. This rope-like organ is about 17 inches long and extends from the brain stem to just above the waistline in the middle of the back or the first lumbar vertebrae. It is protected by the meninges and also by the backbone or vertebrae.

B. The function of the spinal cord is to send messages from the outer nerves in the body such as the arms and legs up to the brain and from the brain back to the arms and legs. Certain reflex activities performed without conscious thought are controlled within the cord. Pulling one's hand away from something "hot" is an example of this type of reflex activity. There is a diagram of the "reflex arc" further along in this module.

Directions: Fill in the correct answer in the spaces provided. If you have questions, ask your instructor. The answers can be found in the material contained in this module.

1. ________________ is the second largest part of the brain.
2. The _________ helps us maintain our balance and posture.
3. The nervous system is divided into _____________ parts.
4. The ___________ and the spinal cord make up the central nervous system.
5. The _____________ controls our emotions.
6. The spinal cord is protected by a tough tissue called ____________________ .

LEARNING ACTIVITIES - continued

Directions: Indicate whether the following statements are True or False.

		(True)	(False)
1.	The central nervous system is composed of the brain and the spinal cord.	_____	_____
2.	The autonomic nervous system controls body movements that the body can't control.	_____	_____
3.	The cerebrum is the largest portion of the brain.	_____	_____
4.	The medulla controls our body's balance.	_____	_____
5.	The medulla contains the important center for the control of breathing.	_____	_____
6.	Neuron is another name for nerve cell.	_____	_____
7.	Peripheral nerves come off the cerebellum.	_____	_____
8.	The control center for the senses is the cerebrum.	_____	_____
9.	Meninges cover only the peripheral nervous system.	_____	_____
10.	The cerebrum controls the emotions.	_____	_____

The answers to these questions can be found at the end of this module.

ACTIVITY #3. Peripheral Nervous System

Directions: Read the following.

Peripheral nerves control voluntary movements. Many pairs of nerves extend from the spinal cord and the brain and travel to the arms and the legs, and to other peripheral areas of the body. These nerves carry messages to and from these various body parts (arms, legs, skin) to let the brain know what is happening. There are 12 pairs of nerves extending from the brain and 31 pairs of nerves extending from the spinal cord.

Example: When the fingers pick up an object, the nerves in the fingers send impulses up the arm to the spinal cord and then to the brain. The brain then sends out the message that the object is soft, hard, sticky, etc. Without these peripheral nerves in the fingers, there would be no feeling in the action just described.

LEARNING ACTIVITIES - continued

Cranial Nerves

There are twelve pairs of cranial nerves which are identified as "first cranial nerve, second cranial nerve", and so on to "twelfth cranial nerve." Following is a list of these nerves in their correct order, 1 to 12, and a partial explanation of their relationship to and control of various parts and functions of the body:

1.	Olfactory:	Sensory nerve of smell.
2.	Optic:	Sensory nerve of sight.
3.	Oculomotor:	Motor nerve pertaining to movements of the eye.
4.	Trochlear:	Motor nerve pertaining to movements of the eye.
5.	Trigeminal:	A nerve attached to the brain stem, to which in turn, is attached: (a) the ophthalmic nerve, a sensory nerve of the skin; (b) the maxillary nerve, a sensory nerve related to sensations of the upper skin of the face (scalp), upper teeth, and mucosa of nose, palate, and cheeks; and (c) the mandibular nerve, a motor nerve that controls chewing.
6.	Abducens:	A motor nerve that enables the eye to turn outward.
7.	Facial:	A sensory nerve of taste and a motor nerve which contracts facial muscles (facial expression).
8.	Acoustic (Auditory):	A nerve whose attachments, the cochlear and the vestibular nerves, are sensory nerves of hearing and balance respectively.
9.	Glossopharyngeal:	A nerve whose branches control the muscles of the pharynx (throat) to control swallowing, and the sensory nerves of taste and saliva.
10.	Vagus:	Branches into nerves that control ability to swallow, and taste, are important to the function of the larynx, thoracic and abdominal organs (slow heart beat) and peristalsis.
11.	Spinal Accessory:	A nerve with importance to the ability of the shoulders to move and of the head to turn.
12.	Hypoglossal:	A nerve related to movement of the tongue.

Spinal Nerves: (31 Pairs)

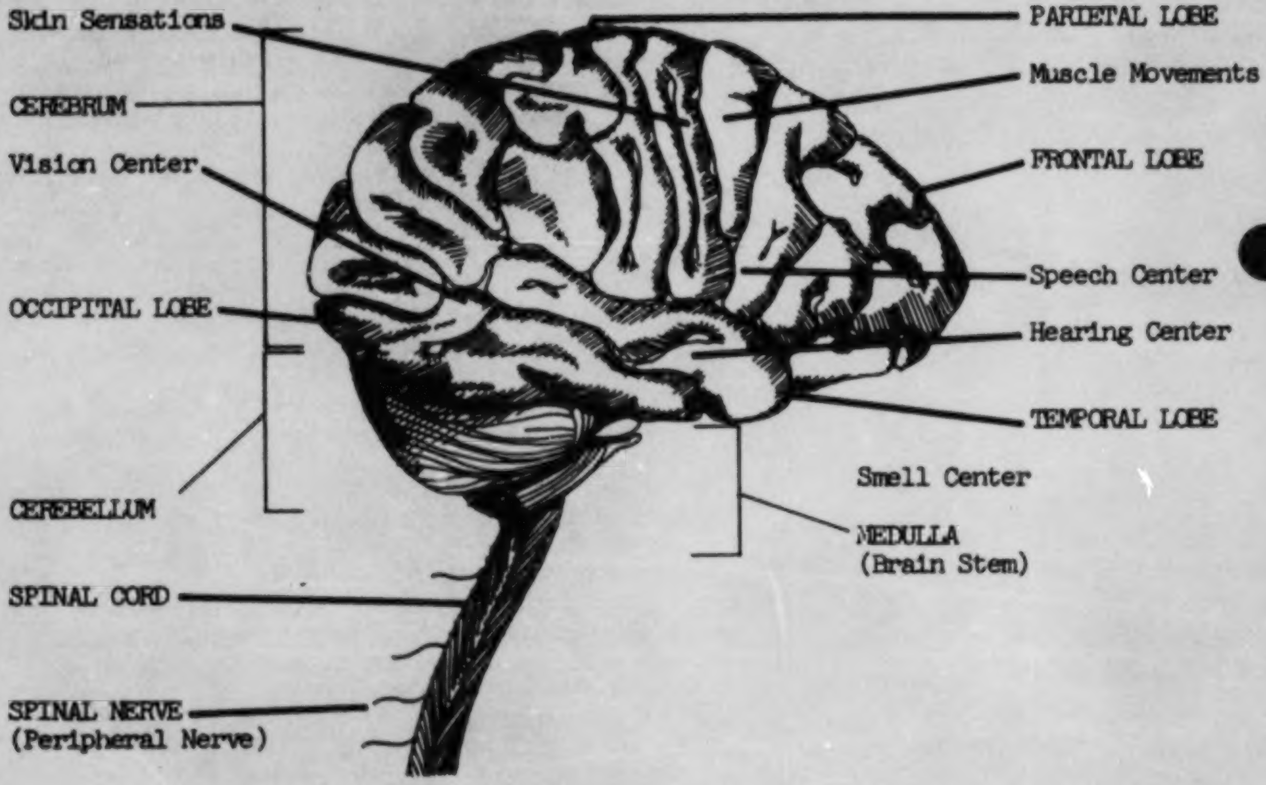
The spinal nerves transmit impulses from the spinal cord to parts of the body not supplied by cranial nerves.

LEARNING ACTIVITIES - continued

1. Cervical (8)
2. Thoracic (12)
3. Lumbar (5)
4. Sacrospinal (5)
5. Coccygeal (1)

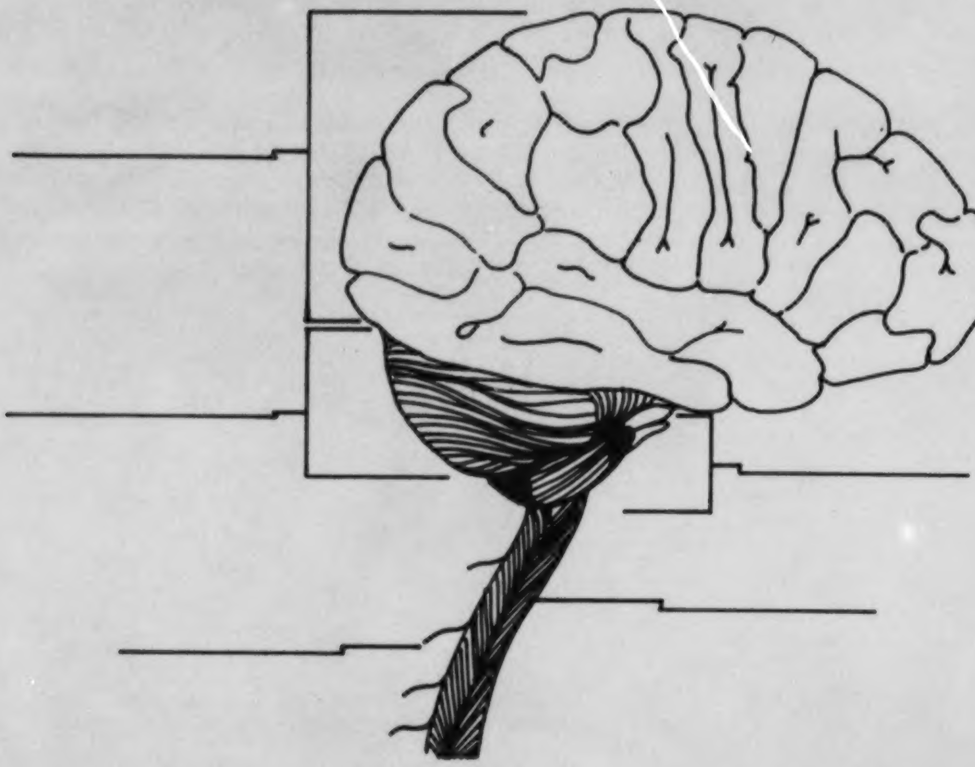
ACTIVITY #4. Nervous System Diagram

Directions: Study the diagram.


Skin Sensations
CEREBRUM
Vision Center
OCCIPITAL LOBE
CEREBELLUM
SPINAL CORD
SPINAL NERVE
(Peripheral Nerve)
PARIETAL LOBE
Muscle Movements
FRONTAL LOBE
Speech Center
Hearing Center
TEMPORAL LOBE
Smell Center
MEDULLA
(Brain Stem)

LEARNING ACTIVITIES - continued

Directions: Identify the five main parts of the Central Nervous System on the diagram below. Check your answers with the diagram on page 8.



Any questions? Ask your instructor.

LEARNING ACTIVITIES - continued

ACTIVITY #5. Autonomic Nervous System

Directions: Read the following.

This part of the nervous system controls all of the automatic body functions most responsible for maintaining life. This of course, includes all involuntary body activities and/or movements. The nerves in this system conduct impulses from the brain stem (medulla) to smooth muscles such as the stomach and heart, and also to the glandular tissue.

This emergency nervous system has two divisions:

A. Sympathetic System - This system, when activated, prepares the individual for fight or flight. The endocrine system material previously studied names the hormone which stimulates the action of the sympathetic nervous system. Listed below are some of the results of the action of this system.

   1. The heart beats faster.
   2. Peripheral blood vessels constrict.
   3. Blood pressure rises.
   4. Blood vessels in skeletal muscles dilate to furnish additional blood to the heart and brain tissue.
   5. Sweat glands and adrenal glands over-secrete.
   6. Saliva and digestion slow.

B. Parasympathetic System - This system insures that normal body functions are carried out, and in effect, is taken for granted as it insures:

   1. Normal heartbeat.
   2. Proper amount of blood flow in peripheral blood vessels.
   3. Normal blood pressure.

Directions: Circle the correct answer in each of the following statements. If you have questions ask your instructor. The answers can be found in Module 31.

1. Walking is a/an: (involuntary or voluntary) activity.
2. Digestion of food is a/an: (voluntary or involuntary) activity.
3. A nerve cell is called a: (neuron or nephron).
4. Jumping is a/an: (voluntary or involuntary) activity.
5. Breathing is a/an: (involuntary or voluntary) activity.

LEARNING ACTIVITIES - continued

6. Meninges are a: (tough or weak) layer of tissue around the brain and spinal cord.

7. Arms are in the: (peripheral or central) part of the body.

ACTIVITY #6. The Neuron or Nerve Cell

Directions: Read the following.

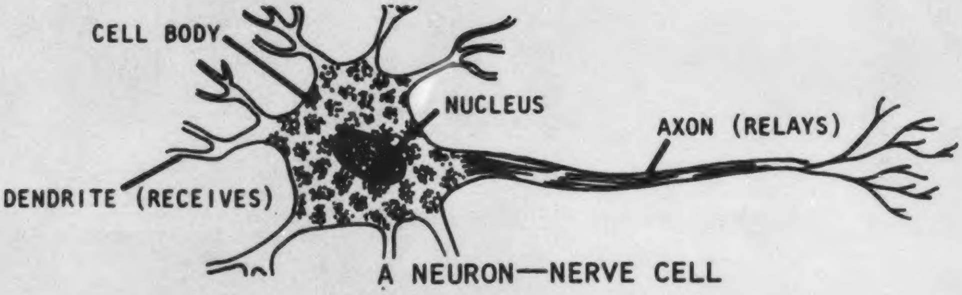
Each nerve cell has three parts:

Dendrite - Branching projection of cell body which transmits impulses to cell body

Cell Body

Axon - Elongated projection leading from cell body which transmits impulses away from the cell body

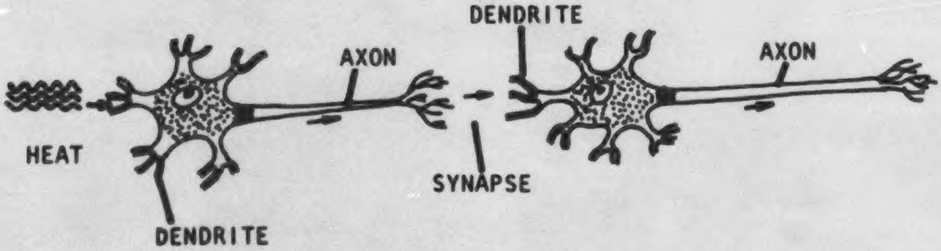
Each nerve cell in the body has these three basic parts.


CELL BODY
NUCLEUS
AXON (RELAYS)
DENDRITE (RECEIVES)

A NEURON—NERVE CELL

A nerve pathway is shown in the chart below. All impulses transmitted throughout the body follow this same pattern of movement.

NERVE IMPULSE PATHWAY


DENDRITE
AXON
AXON
HEAT
SYNAPSE
DENDRITE

A SYNAPSE is the region over which as impulse must pass.

LEARNING ACTIVITIES - continued

The impulse is recharged as it passes from one neuron to another; thus it never loses its original impact. Impulses travel through many neurons before they reach the central nervous system.

There are two main types of neurons:

1. Sensory or afferent neurons - These transmit impulses to the spinal cord and brain from all parts of the body. For example, the skin, mucous membranes, and eyes are receptors because they receive the message.
2. Motorneurons or efferent neurons (also referred to as effectors) - These transmit impulses away from the spinal cord and brain to muscles or glands and cause them to work.

Exercise

Directions: Answer the following questions. The answers can be found in Module J1. If you have any questions ask your instructor.

1. Name the part of the neuron that receives impulses. ____________________
2. Name the part of the neuron that transmits the impulse to another neuron. ____________________
3. Mark the following parts of the body with "R" or "E" to indicate whether they are receptors or effectors:
    a. retina of eye __________
    b. bicep __________
    c. adrenal gland __________
    d. skin __________
4. Describe the correct order of a message passing through a neuron (nerve cell).

____

____

____

ACTIVITY #7. Reflex Arc

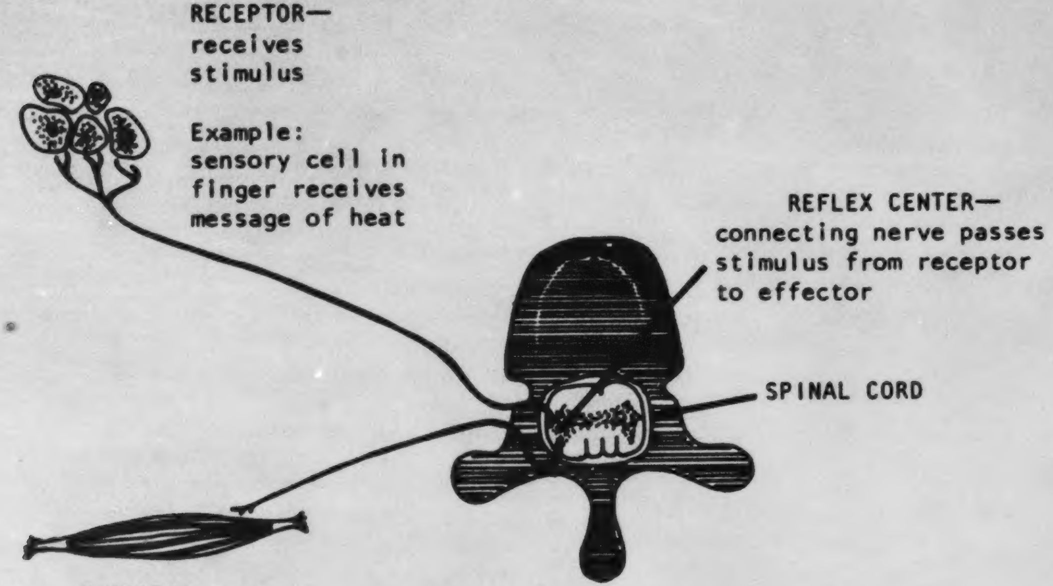
Directions: Read the following.

An immediate response to an impulse is called a reflex. The relex centers lie in the spinal cord.

LEARNING ACTIVITIES - continued

Impulse conduction starts in receptors. Receptors are the beginning of the dendrite of sensory nerves. For example, the finger contains sensory neurons which pick up the impulse that the finger is touching something hot.

The impulse travels along sensory nervė cells in the spinal cord. When the impulse reaches the spinal cord, the message that the finger is touching something hot is translated, and the message then continues on its way back down the arm along motorneurons; the muscles of the arm contract or reflex, to pull the hand away from the object. The motorneuron is the same as the efferent neuron or effectors. The efferent neurons produce the required action. Receptors are the same as sensory neurons. They pick up incoming impulses and carry messages to the brain or spinal cord.


RECEPTOR—
receives
stimulus
Example:
sensory cell in
finger receives
message of heat
REFLEX CENTER—
connecting nerve passes
stimulus from receptor
to effector
SPINAL CORD

EFFECTOR—
reacts to stimulus

Example:
muscle or gland effects
appropriate action from
message—in the case of
a burned finger, pulls
it away from the heat

LEARNING ACTIVITIES - continued

ACTIVITY #8. Common Problems or Conditions of the Nervous System

Directions: Learn these terms. They may be on the Module 31 Post Test.

1.	CONVULSIONS:	Uncontrolled muscular movements which are quite often severe.
2.	PARALYSIS:	Loss of voluntary and involuntary movement in a body part due to injury to the nerves which reach that body part.
3.	EPILEPSY:	A person with this disease has convulsions which can result in loss of consciousness. The convulsions can be severe or so mild that another person is not even aware that it is happening or that it has happened.
4.	SPINAL CORD INJURIES:	If the spinal cord is damaged, no messages can travel to the brain. Special terms have been given to the conditions resulting from such injuries. Some of these injuries are: 1. Quadriplegia - Both arms and legs are paralyzed or unable to move. 2. Paraplegia - The lower part of the body or the legs are paralyzed or unable to move.
5.	STROKE:	A condition resulting from damage to areas in the brain. The amount of damage depends on how much of the brain and what areas of the brain are damaged. A whole side of the body can be paralyzed such as the right arm and the right leg or the left arm and the left leg. This is called hemiplegia.
6.	HEAD INJURY:	Usually resulting from a traumatic blow (trauma - a dangerous injury or wound to living tissue) to the head. The brain is very delicate and any pressure on the brain may result in headaches, vomiting, loss of consciousness, sensations, paralysis and/or convulsions.

Directions: Fill in the correct word in the spaces provided in the following statements. Answers can be found in material contained in Module 31. If you have questions, ask your instructor.

1. Loss of movement to a body part is called ______________________________ .

2. Uncontrolled muscular movements which can often be severe are called ________ ____ .

LEARNING ACTIVITIES - concluded

3. A condition which results in both the arms and the legs being unable to move is called ____________________.

4. A condition which results when one side of the body such as the right arm and the right leg are paralyzed is called ______________________.

5. A condition pertaining to paralysis of the lower part of the body is called ____________________.

ANSWERS

ACTIVITY #2

1. T
2. F
3. T
4. F
5. T
6. T
7. F
8. T
9. F
10. T

NERVOUS SYSTEM AND SPECIAL SENSES

Module J2 - The Eye

RATIONALE

Without the use of the eyes it would be extremely difficult to perform everyday tasks. As a health care worker, if you understand how the eye works you will be better able to help patients with eye problems.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify the twelve parts of the eye on a given diagram.
2. Identify one characteristic and/or function for each of the five parts of the eye.

LEARNING ACTIVITIES

Directions: All the information you need to complete this module successfully is included in the learning activities. The written activities are included to help you prepare for the Post Test and help you learn the information presented. You will be instructed what to do as you proceed with the module. Always go to your instructor if you have any questions.

ACTIVITY #1. The Eye

Directions: Read the following.

The eye is a hollow, round ball filled with a semiliquid. It has many parts which working together enable the person to see the environment.

Wall of the Eye

The wall of the eye is composed of three layers with related parts.

A. SCLERA - This is a tough, fibrous, outer coat which functions as the protective layer. It is the white portion of the eye.

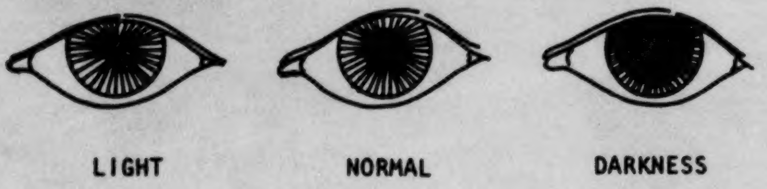
   1. Cornea - This is a transparent portion in front of the eye.
   2. Conjunctiva - This thin mucous membrane lines the inner surface of the eyelid all around the eye. Thus when a person who wears contact lenses loses the contact in the eye it can go only so far before the conjunctiva stops it. This mucous membrane sometimes becomes infected and when it does the condition is called conjunctivitis.

LEARNING ACTIVITIES - continued

B. CHOROID - Beneath the sclera is a vascular layer called the choroid. Its job is to nourish the eye. Other structures in this layer are called:

1. Iris - This is the colored part of the eye. The iris controls the amount of light which enters the eye by causing constriction and dilation of the pupil.

2. Pupil - The pupil is the black spot of the iris. It is literally just a spot or hole as there is no structure involved. It appears black because there is no light inside the eye. The doctor looks through the pupil when examining the eye with the ophthalmoscope. It is this instrument that enables the doctor to see into the back part of the eye.



Pupil Size with Varying Amounts of Light

3. Lens - This is behind the iris. Muscles attached to the lens cause it to change shape so objects can be seen both close at hand and far away. It is the lens that is not functioning properly when patients are said to be near-sighted or far-sighted. The lenses in eye glasses are adjusted to compensate for the lens in the eye. When the normally clear lens of the eye becomes cloudy, and vision is impaired, the condition is called a cataract. Cataracts are sometimes present at birth. Removal of the lens permits light rays to enter the eye, and sight is restored. Since the lens enables vision adjustment to different distances, glasses must be worn to compensate for its loss.

4. Ciliary Muscles - These are the muscles attached to the lens that contract to help with distant vision and relax to help with near vision.

C. RETINA - This is the inside wall of the eye. Its nerves send messages of color and light to the optic nerve. Rods are special cells in the retina which help one see at night. Cones are special cells which control light vision and color vision.

There are two semiliquid fluids in the eye.

1. Aqueous humor - This fills the cavity in front of the lens and provides nourishment to the inner eye structure.

2. Vitreous humor - This is a firm gelatin-like material behind the lens. It maintains sufficient pressure to keep the retina from collapsing and holds the shape of the eyeball.

LEARNING ACTIVITIES - continued

At the back of each eye is the optic nerve which sends sight messages to the brain.

Therefore, light travels through the pupil, ⟶ through the lens, ⟶ through the vitreous fluid, ⟶ to the retina.

The message of the light travels from the retina, ⟶ to the optic nerve, ⟶ to the brain.

Exercise

Directions: Fill in the blank spaces below with the correct word. If you have any questions, ask your instructor. The answers can be found in the material in this module.

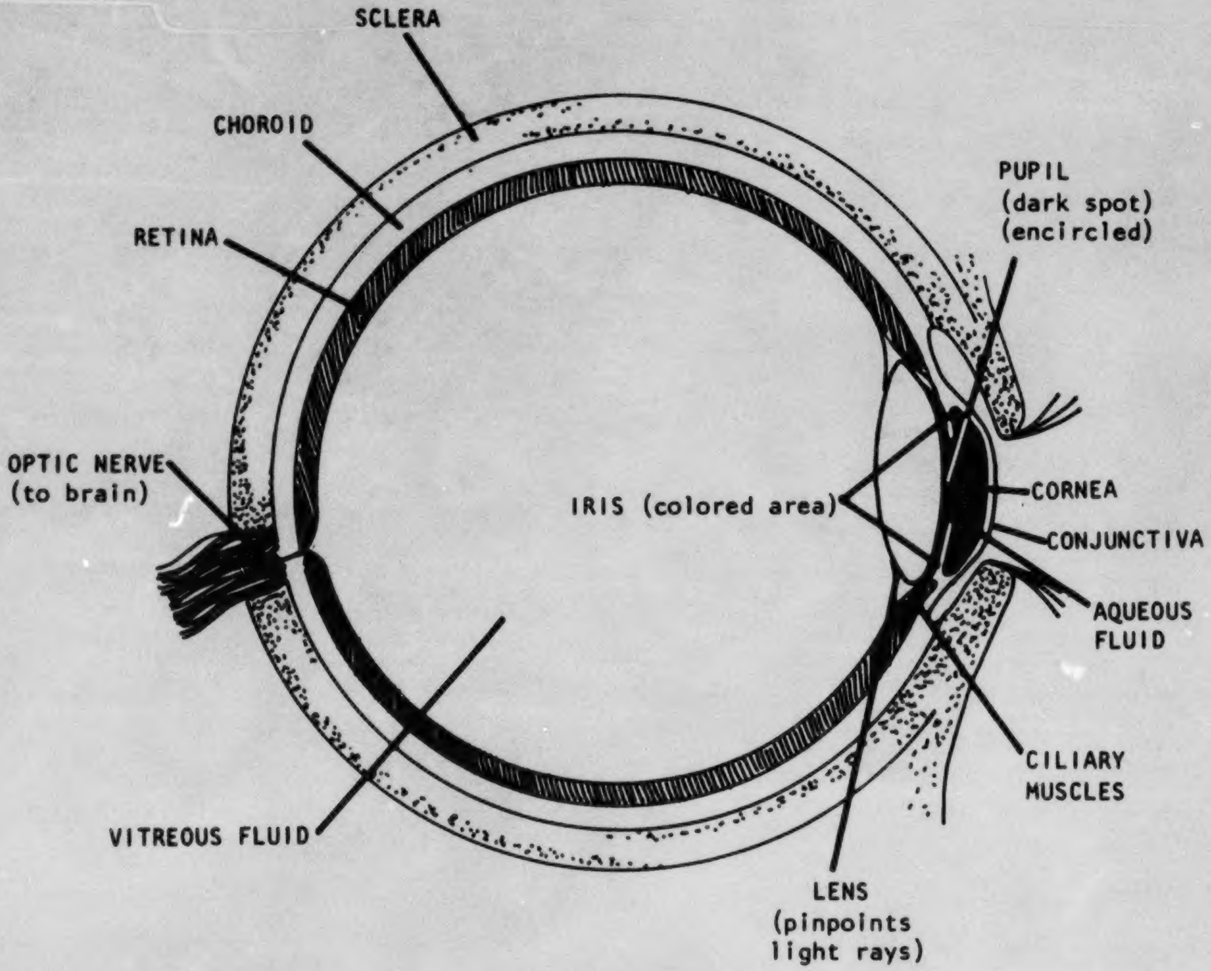
1. The outer, tough wall of the eye is called the ______________________________ .
2. The part of the eye that gives us the blue, green, or brown coloring is called the ________________________________ .
3. The ______________ is the black spot in the center of the eye that enables us to see.
4. When we are in bright light both the ___________ and the ___________ change in size.
5. The ______________ ______________ is a jelly-like liquid that gives the eye its round shape.
6. Messages of color and light go from the _____________ to the __________ nerve.
7. One sees objects that are both close and far away because the ___________ changes shape.

Study the diagram on the following page.

LEARNING ACTIVITIES - continued

Directions: Study the following diagram so you will become familiar with the names and locations of the various parts of the eye.

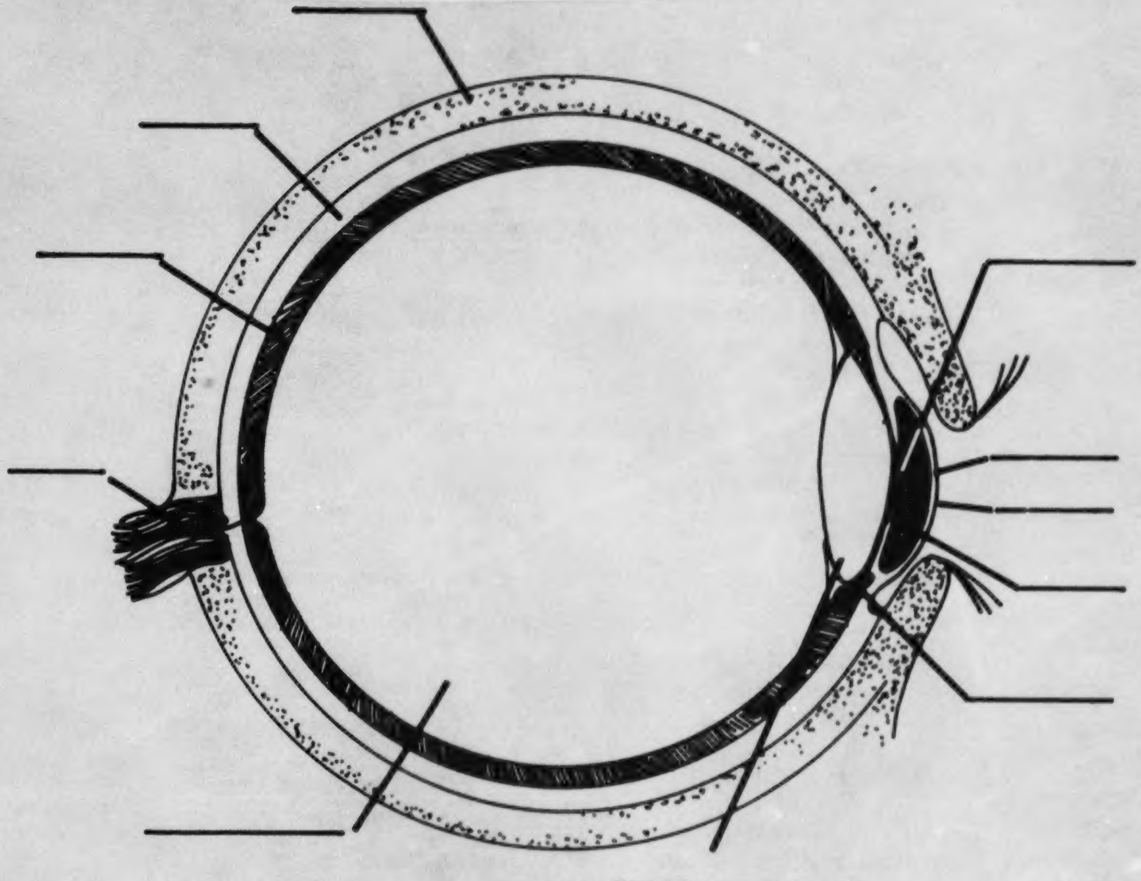
THE EYE


SCLERA
CHOROID
RETINA
OPTIC NERVE (to brain)
PUPIL (dark spot) (encircled)
IRIS (colored area)
CORNEA
CONJUNCTIVA
AQUEOUS FLUID
CILIARY MUSCLES
VITREOUS FLUID
LENS (pinpoints light rays)

LEARNING ACTIVITIES - continued

Directions: Label the following diagram of the eye. The answers can be found in the diagram on the preceding page.

THE EYE



LEARNING ACTIVITIES - continued

Exercise

Directions: Circle the correct answer to the following statements. If you have any questions, ask your instructor. The answers can be found in the material contained in this module.

1. The eye is the organ used to:
   a. see (sight)
   b. hear
   c. feel (touch)
   d. none of the above

2. The iris is the:
   a. colored part of the eye (blue, green, brown)
   b. white part of the eye
   c. clear part of the eye
   d. black part of the eye

3. The sclera is the:
   a. colored part of the eye (blue, green, brown)
   b. white part of the eye
   c. clear part of the eye
   d. black part of the eye

4. The pupil is the:
   a. colored part of the eye (blue, green, brown)
   b. white part of the eye
   c. clear part of the eye
   d. black part of the eye

5. The lens is located:
   a. behind the retina
   b. in front of the retina
   c. behind the iris
   d. in front of the iris

6. The vitreous fluid:
   a. forms the teardrops
   b. gives shape o the eye
   c. is the water between the eye and the eyelid
   d. all of the above

LEARNING ACTIVITIES - concluded

7. The optic nerve:

   a. tells us when there is something such as a piece of dust in the eye
   b. makes the pupil smaller
   c. controls the blinking reflex
   d. sends messages of sight to the brain

8. When the pupil gets larger:

   a. the iris gets larger
   b. the entire eye gets larger
   c. there is brain damage
   d. more light is able to enter the eye

9. The retina:

   a. is the inner layer of the eye
   b. sees colors and bright lights
   c. has many nerves for day and night vision
   d. all of the above

10. The eyeball is:

    a. a solid bundle of muscle
    b. an empty ball
    c. a ball filled with fluid
    d. a ball filled with air

NERVOUS SYSTEM AND SPECIAL SENSES

Module J3 - The Ear

RATIONALE

Ears have many uses and important among them is as an aid to learning. People who have an ear impairment or hearing loss require help so the person can learn and in some cases even speak.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify two of the three sections of the ear.
2. Identify ten parts found in the three sections of the ear on a given diagram.
3. Identify characteristics and/or functions of four of the ten parts of the ear.
4. Recognize the medical terms used to identify structures in the ear.

LEARNING ACTIVITIES

Directions: All the information you need to complete this module successfully is included in the learning activities. The written activities are included to help you prepare for the Post Test and to help you learn the information presented. You will be instructed what to do as you proceed with the module. Always go to your instructor if you have any questions.

ACTIVITY #1. The Ear

Directions: Read the following.

Just as the eye is sensitive to light, the ear is sensitive to sound. The ear functions to enable sounds to be heard.

There are three sections of the ear with different structures within each section.

A. External Ear - This serves a decorative purpose but it also protects the middle ear.

   1. Pinna or outer ear is the visible part. It is composed of an irregular-shaped piece of cartilage covered with skin. It varies greatly in size and shape and helps to collect sound waves.

   2. Auditory canal or ear canal helps direct the sound waves to the middle ear and also protects the middle ear from damage. Care should be exercised not to place anything too far inside the auditory canal as to do so may cause damage to the middle ear.

LEARNING ACTIVITIES - continued

3. There are specialized sebaceous glands in the auditory canal which produce cerumen, commonly called earwax.

B. Middle Ear - The function of the middle ear is to conduct sound waves from the eardrum to the inner ear.

1. Tympanic membrane, the eardrum, is a membrane which vibrates as the sound waves hit. The higher the sound, the more rapidly your eardrum vibrates. The lower the sound, the slower your eardrum vibrates.

2. Malleus (hammer), incus (anvil), and stapes (stirrup) are three bones which form a chain across the middle ear. It is by means of these bones that sound waves are transmitted from the outer to the inner ear.

3. Eustachian tube leads from the nasopharynx into the middle ear. Air carried through this tube helps maintain equalization on both sides of the eardrum.

4. Infections of the nose and throat can move along the eustachian tube to the middle ear causing it to become inflamed. This is known as Otitis Media. Fluid and pus form within the middle ear and may result in fusion (locking) of the middle ear bones. Increased pressure may cause the eardrum to rupture. Both conditions decrease the ability to transmit sound waves.

C. Internal Ear - This functions to control hearing and balance.

1. Cochlea, a snail-shaped structure is another part of the hearing process. Coming off the cochlea is the auditory nerve which carries the sound waves to the brain in order that hearing can occur.

2. Semicircular canals contain a liquid as well as nerve endings which effect balance. Stimulation of these nerve endings sends impulses to the brain about the position of the head. Dizziness results from the disruption of the fluid on these semicircular canals and the patient is said to have an ear infection.

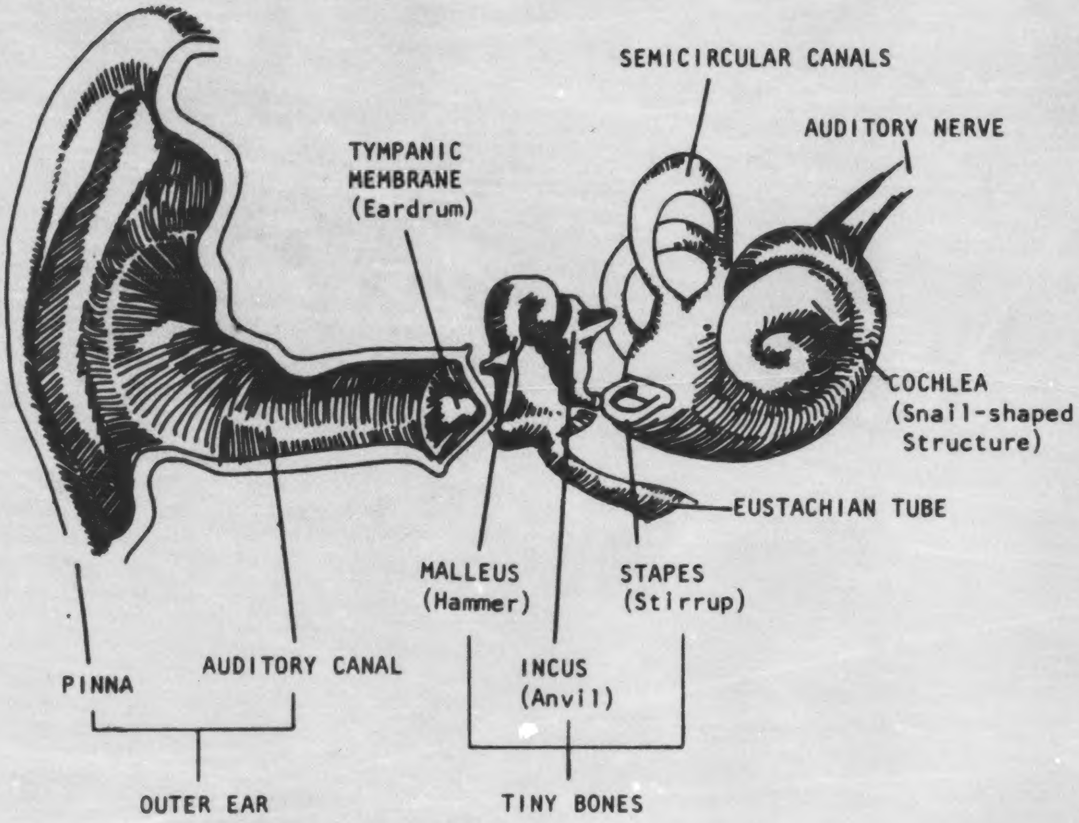
Directions: Name the parts of the ear. The answers can be found in the material contained in this module.

1. What connects the ears with the throat? ____________________
2. What is the snail-shaped part of the inner ear? ____________________
3. What is the part of ear the on the outside of the head? ____________
4. What is the first part of the ear to vibrate? ____________________
5. What is the middle bone of the middle ear? ____________________

LEARNING ACTIVITIES - continued

Directions: Study the diagram.

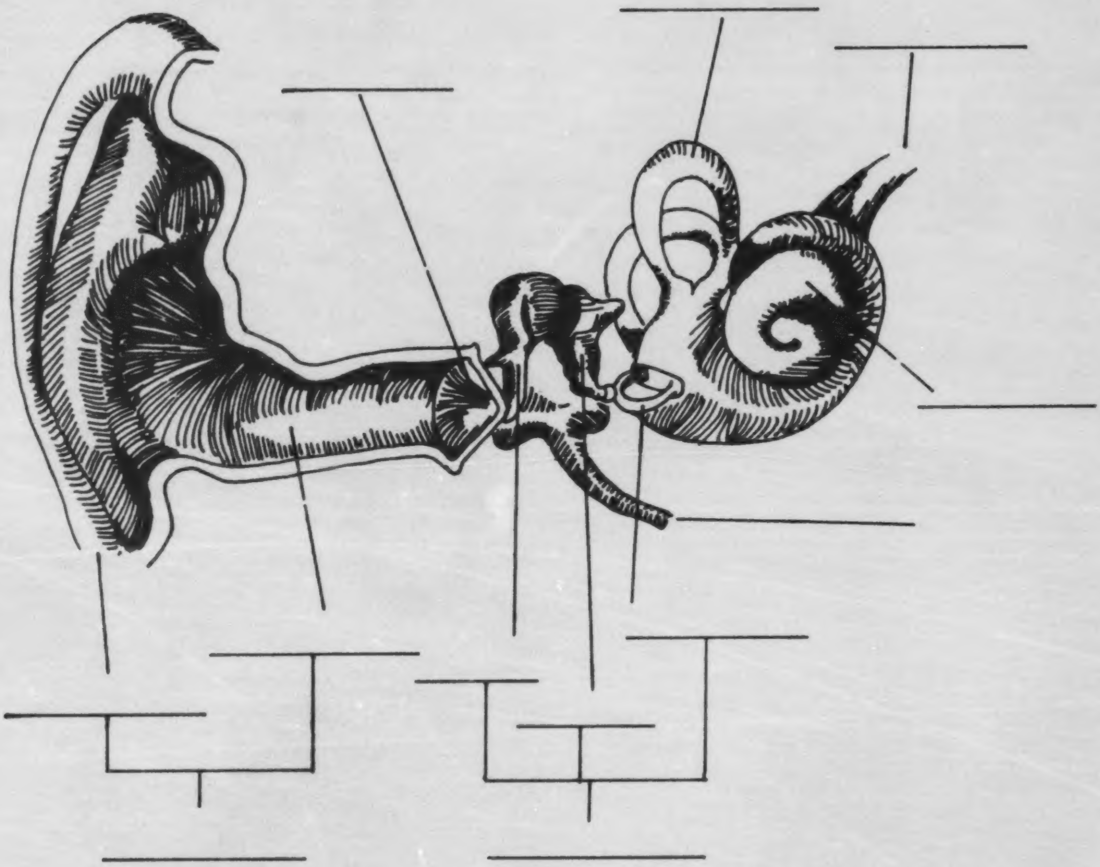
EAR


SEMICIRCULAR CANALS
AUDITORY NERVE
TYMPANIC MEMBRANE (Eardrum)
COCHLEA (Snail-shaped Structure)
EUSTACHIAN TUBE
MALLEUS (Hammer)
STAPES (Stirrup)
PINNA
AUDITORY CANAL
INCUS (Anvil)
OUTER EAR
TINY BONES

LEARNING ACTIVITIES - continued

Directions: Label the diagram. You can check your answers with the diagram on the preceding page.

EAR



LEARNING ACTIVITIES - concluded

Directions: Complete the questions below. The answers can be found in the material contained in this module. If you have any questions, ask your instructor.

1. Name the three (3) major sections of the ear.

   a. ______________________

   b. ______________________

   c. ______________________

2. Name one (1) function of each section of the ear.

   a. ______________________

   b. ______________________

   c. ______________________

3. Give the medical term for each of the following:

   a. eardrum ______________________

   b. outer ear ______________________

   c. hammer ______________________

   d. anvil ______________________

   e. stirrup ______________________

   f. ear canal ______________________

unit 4

TERMINOLOGY

Following is a list of terms, together with the definition of each one. These are the terms you should recognize and understand for the successful completion of Unit 4 of the Health Occupations Program. Directions for studying and using these terms are given in the individual modules of the unit.

The terms for Unit 4 are divided according to the systems studied in the unit. If you will turn to Unit 7 and learn the prefixes and suffixes, you will be able to identify the meanings of many of the words in this section.

Some of the terms listed here have more than one meaning in general use or in specialized sciences. However, as defined here, they apply only to the anatomy and physiology of the systems studied in the unit.

MODULE A - ORGANIZATION OF THE BODY

ABDUCTION:	Move away from the body.
ADDUCTION:	Move toward the body.
ANATOMY:	Study of the structure of the body.
ANTERIOR:	Pertaining to the front side.
ASSIMILATE:	Absorption by the body of digested food.
CAVITY:	Solid-looking body spaces which contain organs.
CELL:	Unit of structure of all animals and plants and the physical basis for all life processes.
DORSAL:	Pertaining to the back side.
FRONTAL:	Pertaining to the front side.
INFERIOR:	Beneath or lower.
LATERAL:	Pertaining to the side; away from the middle.
MEDIAL:	Pertaining to the middle.
MEMBRANE:	Thin, soft, pliable layer of tissue which covers an organ or structure, separates one part from another, or lines a tube or cavity.
MICROSCOPIC:	So small it can be seen only with the aid of a microscope.

TERMINOLOGY - continued

MITOSIS:	Process of reproduction of the cell where one cell divides in half to make two cells.
PERITONEUM:	Membrane that lines the abdominal cavity.
PHYSIOLOGY:	Study of the function of the body.
PLANE:	Flat surface formed by making a cut--imaginary or real—through the body or a part of the body.
PLEURA:	Membrane that surrounds the lungs.
PRONE:	Lying with face downward (opposite of supine).
RETROPERITONEAL:	Space which lies behind the peritoneum.
SUPERIOR:	Above or on top.
SUPINE:	Lying on the back or with the face upward.
SYSTEM:	Group of organs which function together for the same purpose.
TISSUE:	Group of cells which function together for the same purpose.
TRANSVERSE:	Lying across or crosswise.
VENTRAL:	Pertaining to the front side.

MODULE B - MUSCULOSKELETAL SYSTEM

ARTHRITIS:	Inflammation of a joint.
ARTICULATION:	Name for joints or a point of contact between two bones.
CARTILAGE:	A tough, elastic substance forming part of the skeleton.
COMPOUND FRACTURE:	Break in a bone where the skin is broken by a piece of bone.
CONTRACT:	Shortening of muscles.
COSTAL:	Rib.
CRANIUM:	Bones of the skull.
DIAPHRAGM:	Muscle between the thoracic and the abdominal cavity used for breathing.

TERMINOLOGY - continued

DIAPHYSIS:	Shaft or middle section of a long bone.
EPIPHYSIS:	Ends of long bones where red blood cells are manufactured.
EXTENSION:	Increasing the angle between two bones.
FEMUR:	Thigh bone.
FIBULA:	Calf bone.
FLEXION:	Decreasing the angle between two bones.
FRACTURE:	A breaking or cracking of a bone.
GLUTEUS MAXIMUS:	Muscles of the buttocks.
GREENSTICK FRACTURE:	Bone is partly bent and partly broken.
HUMERUS:	Upper bone of the arm.
INTERCOSTAL:	Muscle between each rib, also used in breathing.
INVOLUNTARY:	Movements which cannot be controlled. Examples, digestion process and heartbeats.
LIGAMENTS:	Fibrous tissues which connect bone to bone.
MANDIBLE:	Jawbone.
METACARPALS:	Bones in the hands.
ORTHOPEDICS:	The medical specialty dealing with bones, joints, and muscles.
OSTEO:	Prefix meaning "bone".
OSTEMOA:	Bone tumor.
OSTEOMYELITIS:	Inflammation of bone or bone marrow.
PATELLA:	Kneecap.
PERIOSTEUM:	Covering of bone necessary for bone growth, repair, and nutrition.
PHALANGES:	Toe and finger bones.
PIVOT JOINT:	Bone resting atop another bone, permitting free movement in a pivot type manner.
SCAPULA:	Shoulder blade.

TERMINOLOGY - continued

SEPTUM:	Bony wall separating the nasal passages.
SINUS:	Cavity within a bone.
SYNOVIAL:	Lubricating fluid of the joints.
TENDONS:	White fibrous tissues which connect muscles to bones.
TIBIA:	Shin bone.
VOLUNTARY:	Controllable movements such as walking, etc.

MODULE C - INTEGUMENTARY SYSTEM

ACNE:	Chronic skin disorder marked by pimples, cysts, and blackheads.
CHOLESTEROL:	Normal substance in bile which is found in egg yolks, animal tissues, and various oils and fats.
CYANOSIS:	Blueness of the skin from lack of oxygen in the blood.
DERMATITIS:	Inflammation of the skin.
DERMIS:	Inner layer of skin.
DIAPHORESIS:	Profuse perspiration or sweating.
EPIDERMIS:	Outer layer of skin.
MELANIN:	Color or pigmentation in the skin and hair.
PALLOR:	Pale.
PORES:	Minute or small openings of the sweat glands.
RUBOR:	Redness of the skin.
SEBACEOUS:	Oil glands.
SUDORIFEROUS:	Sweat glands.
TACTILE:	Sense of touch.

MODULE D - DIGESTIVE SYSTEM

ALIMENTARY CANAL:	Canal through which the food passes in a continuous way from the mouth along into the anus.

TERMINOLOGY - continued

APPENDIX:	Worm-shaped organ projecting from the cecum of the large intestine.
ASCITES:	Fluid in the abdominal cavity.
BILE:	Substance produced by the liver, and stored in the gallbladder, which assists with the digestion of fats.
CECUM:	First portion of the large intestine where the appendix is attached.
CHYME:	Semifluid food in the stomach after it mixes with digestive juices.
CHOLECYSTITIS:	Inflammation of the gallbladder.
CHOLELITHIASIS:	Stones in the gallbladder.
COLITIS:	Inflammation of the colon.
COLON:	Large intestine.
DIVERTICULUM:	Pouch in the walls of a canal or an organ.
DUODENUM:	First part of the small intestine.
DYSPEPSIA:	Symptom of abdominal distress during digestion process.
ESOPHAGUS:	Canal through which food is passed along to the stomach.
GALLBLADDER:	Organ which stores liver bile.
GASTRITIS:	Inflammation of the stomach.
GASTROENTERITIS:	Inflammation of the stomach and the intestines.
HEMATEMESIS:	Vomiting blood.
HEPATITIS:	Inflammation of the liver.
HERNIA:	Projection of a part from its natural cavity.
HIATUS HERNIA:	Projecting of any structure into the diaphragm.
HYDROCHLORIC ACID:	Digestive juice which is produced by the stomach and helps in the digestion of food. Symbol is HCl.
ILEITIS:	Inflammation of the ileum.
ILEUM:	Third and last part of the small intestine.
INTUSSUSCEPTION:	Telescoping of one part of the intestine into another.

TERMINOLOGY - continued

JAUNDICE:	Symptom of liver disease marked by yellow skin.
JEJUNUM:	Second portion of the small intestine which is between the duodenum and ileum.
LIVER:	Organ that secretes bile, converts sugar, and forms urea.
ORIFICE:	Any opening of the body.
PANCREAS:	Organ that secretes enzymes, especially insulin.
PANCREATITIS:	Inflammation of the pancreas.
PAPILLAE:	Projections on the surface of the tongue which contain taste buds.
PEPTIC ULCER:	Lesion in the lining of the stomach area.
PERISTALSIS:	Wave-like movements which propel food along the alimentary canal.
PERITONEUM:	Membrane covering the internal organs.
PERITONITIS:	Inflammation of the peritoneum.
PYLORUS:	Lower end of the stomach which allows food to pass into the duodenum.
RECTOCELE:	Protrusion of the rectum into the vagina.
RECTUM:	Last section of intestine where feces are stored.
SALIVA:	Liquid produced by the salivary glands in the mouth which mixes with food and makes it easier to swallow.
UMBILICAL HERNIA:	Hernia in the umbilical, naval area.
VILLI:	Tiny projections of the small intestine which absorb the usable portion of the food into the bloodstream.

MODULE E - CIRCULATORY SYSTEM

ANEMIA:	Deficiency of red blood cells.
ANEURYSM:	Bulging of a weak spot in an artery.
ANGINA PECTORIS:	Attacks of chest pain caused by lack of oxygen in heart muscles.

TERMINOLOGY - continued

AORTA:	Largest artery from the heart that distributes blood to the body.
ARTERIES:	Vessels which carry blood away from the heart.
ARTERIOSCLEROSIS:	Hardening of the arteries.
ATHEROSCLEROSIS:	Thickening of the blood vessels.
BLOOD:	Fluid circulating in the body, through the arteries, the capillaries, and the veins, which carries nourishment to the cells, and waste products away from the cells.
BLOOD PRESSURE:	Force exerted by the blood against the artery walls.
BRADYCARDIA:	Slow heartbeat.
CAPILLARIES:	Small vessels that can be seen only through a microscope; they connect smaller arteries or arterioles with smaller veins or venules.
CARDIOVASCULAR DISEASE:	Disease of the heart and the blood vessels.
CONGESTIVE HEART FAILURE:	Inflammatory heart disease which damages the heart muscle and the valves.
CORONARY ARTERY:	Artery from the aorta which supplies blood to the heart chamber.
CORONARY THROMBOSIS:	Blood clot in a coronary artery.
DIASTOLE:	Heart in its resting state; in reading blood pressure, it is the last sound to be heard.
EMBOLUS:	Blood clot that moves to another part of the body.
ENDOCARDITIS:	Inflammation of the endocardium of the heart.
ENDOCARDIUM:	Membrane lining the chambers of the heart.
ERYTHROCYTES:	Red blood cells which carry oxygen and carbon dioxide.
FIBRILLATION:	Quivering of the heart muscles.
HEMATOMA:	Blood tumor.
HEMOPHILIA:	Hereditary tendency to bleed.

TERMINOLOGY - continued

HODGKIN'S DISEASE:	Disease characterized by enlargement of the lymph nodes.
HYPERGLYCEMIA:	An abnormally high quantity of sugar in the blood.
HYPERTENSION:	High blood pressure.
HYPOGLYCEMIA:	An abnormally low quantity of sugar in the blood.
HYPOTENSION:	Low blood pressure.
LEUKEMIA:	Malignant blood disease resulting in an increased number of abnormal white blood cells.
LEUKOCYTES:	White blood cells which fight bacteria.
LYMPH NODES:	Small glands scattered throughout the body which filter out bacteria.
MITRAL STENOSIS:	Narrowing of the mitral valve.
MITRAL VALVE:	The valve of the left chamber of the heart.
MYOCARDIAL INFARCTION:	Stoppage of blood supply in the vessels going to the myocardium.
MYOCARDIUM:	Muscular part of the heart.
PERICARDITIS:	Inflammation of the pericardium.
PERICARDIUM:	Tissue covering the heart.
PHLEBITIS:	Inflammation of a vein.
PLASMA:	Liquid portion of the blood.
PLATELETS:	Small particles in blood which help blood to clot.
PORTAL CIRCULATION:	Passage of blood through the liver exchanging nutrients with the liver cells.
PULMONARY EMBOLUS:	A blood clot that has lodged in a lung.
PULSE:	Expansion of arteries which can be felt by placing the fingers on a point where an artery crosses a bone close to the surface of the skin.
PULSE FORCE:	Strength of each beat.

TERMINOLOGY - continued

PULSE RATE:	Number of pulse beats per minute.
PULSE RHYTHM:	Pattern by which the heartbeats are spaced.
PULSE TENSION:	Amount of resistence the artery gives when the finger is pressing against it.
SERUM:	Plasma from which fibrinogen, gamma globulin, albumin, and other materials have been removed.
SPLEEN:	Large lymphatic organ which makes lymphocytes and stores extra blood until it is needed.
SYSTOLE:	Heart in a state of contraction; when reading blood pressures, it is the first sound heard.
TACHYCARDIA:	Rapid heartbeat.
THROMBOPHLEBITIS:	Inflammation of a vein developing before the formation of a thrombus.
THROMBUS:	Stationary blood clot obstructing a blood vessel or cavity of the heart.
VEINS:	Vessels which carry blood to the heart.

MODULE F - RESPIRATORY SYSTEM

ALVEOLI:	Air sacs which exchange oxygen for carbon dioxide.
APEX:	Pointed or top surface of the lungs.
ASTHMA:	Sudden dyspnea caused by bronchial spasms.
BASE:	The broad surface of the lungs or surface nearest the diaphragm.
BRONCHI:	Branches of the trachea to the lungs.
BRONCHIOLES:	Smaller branches of the bronchi inside the lung.
BRONCHITIS:	Inflammation of the bronchial tubes.
BRONCHOPNEUMONIA:	Pneumonia of the bronchial tubes and the lungs.
CARBON DIOXIDE:	The gas which makes up about 4% of inhaled air and 4% of exhaled air. Symbol is CO_2.
DYSPNEA:	Difficult breathing.

TERMINOLOGY - continued

EPIGLOTTIS:	A piece of cartilage which closes over the larynx when swallowing occurs.
EXPIRATION:	Act of breathing out; releasing carbon dioxide.
GLOTTIS:	The opening between the vocal cords or folds of tissue.
HEMOPTYSIS:	Spitting up blood.
INSPIRATION:	Act of breathing in oxygen.
LARYNX:	Voice box.
LOBE:	Divisions of the lungs; the left lung has two lobes and the right lung has three lobes.
NITROGEN:	The gas which makes up approximately 80% of the air.
OXYGEN:	The gas which makes up approximately 20% of the air; Symbol is 0_2.
ORTHOPNEA:	Condition of difficult breathing relieved only by sitting up.
PERTUSSIS:	Whooping cough.
PHARNYX:	Throat.
PLUERAL SPACE:	The space between the lungs and the pleural membrane.
PLEURISY:	Inflammation of the pleural membrane.
PNEUMONA:	Collection of fluid in the lungs.
PNEUMONITIS:	Inflammation of the lung.
PNEUMOTHORAX:	Presence of air or gas in the pleural cavity.
PULMONARY EDEMA:	Large amounts of fluid in the lung.
RESPIRATION:	One inspiration and one expiration = one respiration.
THORACIC:	Pertaining to the chest area.
THYROID:	The gland in the neck that controls growth and metabolism.

MODULE G - URINARY SYSTEM

ANURIA:	Lack of urine.

TERMINOLOGY - continued

BLADDER:	Hollow organ which serves as a reservoir for urine.
CYSTITIS:	Inflammation of the bladder.
DYSURIA:	Difficult urination.
FILTRATION:	Water and dissolved substances filtered out of the blood by the glomeruli.
GLOMERULUS:	Large collection of capillaries found in each nephron.
HEMATURIA:	Blood in the urine.
KIDNEY:	One of the paired organs which excretes wastes from the bloodstream and makes urine.
KIDNEY CORTEX:	Outer portion of kidney where nephrons make urine.
KIDNEY MEDULLA:	Inner portion of kidney where urine is collected in tubules.
MICTURATE:	Another term for voiding.
NEPHRITIS:	Inflammation of the kidney.
NEPHRO:	Pertaining to the kidney.
NEPHRON:	Unit of structure of the kidney.
POLYURIA:	Large amounts of urine produced.
PYELONEPHRITIS:	Inflammation of the kidney.
REABSORPTION:	Reabsorption of water and dissolved substances from the kidney tubules back into the blood.
RETENTION:	Inability to urinate even though the bladder is full.
RENAL:	Pertaining to the kidney.
RENAL CALCULUS:	Kidney stone.
SUPPRESSION:	Failure of the kidneys to make urine.
UREMIA:	Urine elements in the blood.
URETER:	Tube which carries urine from the kidney to the bladder.
URETHRA:	Tube which carries urine from the bladder to the outside.
URINARY CALCULUS:	Stone anywhere in the urinary system.

TERMINOLOGY - continued

URINARY RETENTION:	Failure to expel urine.
URINE:	Amber-colored liquid consisting of 96% water and 4% solids such as uric acid, sodium chloride, potassium chloride, calcium, and others.

MODULE H - ENDOCRINE SYSTEM

ADENO:	Prefix denoting a "gland".
ADRENALIN:	Same as epinephrine, hormone which reacts to stress when stimulated by nerve impulses.
DIABETES MELLITUS:	Deficiency of insulin from the pancreas.
DUCT:	Narrow tubular vessel or channel.
ENDOCRINE:	A ductless gland; one that produces an internal secretion.
GONADS:	Male and female sex glands.
HORMONE:	Chemical substance which is conveyed through the blood to another part of the body.
HYPERFUNCTIONING:	Abnormally high levels of functioning; overactive.
HYPOFUNCTIONING:	Abnormally low levels of functioning; underactive.
IODINE:	Found in most drinking water and must be present in order for the thyroid to make the hormone thyroxin.
LACRIMAL:	Pertaining to the tears.
METABOLISM:	Burning of food for energy.
TETANY:	Disorder marked by convulsive twitching.
TROPHIC:	Refers to the anterior lobe of the pituitary gland.

MODULE I - REPRODUCTIVE SYSTEM

AREOLA:	Darker tissue which surrounds the nipple on the breast.
CERVICITIS:	Inflammation of the cervix.
CERVIX:	Neck of the uterus.

TERMINOLOGY - continued

CIRCUMCISION:	Surgical removal of the foreskin of the penis.
CLITORIS:	Erectile tissue inside the labia minora of the female which is compared to the penis of the male.
CYSTOCELE:	Protrusion of the bladder into the vagina.
DYSMENORRHEA:	Difficult menstruation.
ECTOPIC:	Out of place; ectopic pregnancy is a pregnancy occurring outside the uterus.
EMBRYO:	Second to eighth week of a fertilized ovum.
ENDOMETRIUM:	Lining of the uterus.
ESTROGEN:	Hormone produced during the nine days following the end of the menstrual flow, which repairs the endometrium until the next ovum is released.
FALLOPIAN TUBE:	Tube through which the ovum passes after it leaves the ovary on its way to the uterus.
FERTILIZATION:	Union of the sperm and the ovum.
FETUS:	Unborn human being from the end of third month until birth.
GONADS:	A general term for ovary or testes.
GRAAFIAN FOLLICLE:	The mature ovarian follicle.
GYNECOLOGY:	Study of the diseases of the female.
HYDROCELE:	Swelling of the testes from fluid collection.
MENORRHAGIA:	Excessive menstrual bleeding.
MENORRHEA:	Menstruation.
OVARIAN CYST:	Fluid sac on an ovary.
OVARY:	Produces female ovum (egg).
OVUM:	Female sex egg which combines with one sperm to form a zygote.
PROGESTERONE:	Produced during nine days before the menstrual flow begins and prepares the endometrium in case fertilization occurs.

TERMINOLOGY - continued

PROSTATE:	Gland surrounding the urethra in the male.
RECTOCELE:	Protrusion of the rectum into the vagina.
SCROTUM:	Loose pouch of skin which contains the testes.
SPERM:	Male sex cell which combines with an ovum to form a zygote.
TESTIS:	Male sex gland which produces sperm and male sex hormone.
UTERINE PROLAPSE:	Dropping of the uterus into the vagina.
UTERUS:	Receives the fertilized ovum and houses the fetus until birth.
VAGINA:	Birth canal.
ZYGOTE:	The union of a sperm and an ovum (fertilized egg).

MODULE J - NERVOUS SYSTEM AND SPECIAL SENSES

AUTONOMIC:	Part of the nervous system which controls all the involuntary body activities or movements.
AXON:	Relays impulses to other neurons.
CATARACT:	Cloudiness of the lens of the eye.
CEREBRAL:	Pertaining to the cerebrum.
CEREBELLUM:	Second largest portion of the brain which controls smooth coordinated movements and maintains equilibrium and balance.
CEREBRUM:	Largest portion of the brain which controls thinking, voluntary movements, interpreting sensations and emotions.
CHOROID:	Vascular layer of the eyeball underneath the sclera.
COCHLEA:	Snail-shaped structure inside the inner ear, function of which has to do with hearing.
CONCUSSION:	A condition of the brain caused by a blow or fall.
CONDUCTIVITY:	Ability of a cell to react when stimulated.

TERMINOLOGY - continued

CONES:	Special cells in the retina which control light vision and color vision.
CRANIAL:	Pertaining to the cranium.
DENDRITE:	Receives impulses from other neurons.
DEVIATED SEPTUM:	Abnormal position of the septum.
DIPLOPIA:	Double vision.
EPISTAXIS:	Hemorrhage from the nose.
EUSTACHIAN TUBE:	Tube connecting the pharynx to the middle ear.
GLAUCOMA:	Disease causing pressure on the eye.
IRIS:	Colored part of the eye which controls the size of the pupil.
IRITIS:	Inflammation of the iris.
IRRITABILITY:	The ability of a cell to react when stimulated.
LENS:	Transparent structure which focuses light on the retina.
MEDULLA:	Bulb-like extension of the spinal cord which controls all involuntary vital functions such as the heartbeat and respiration.
MENINGES:	Tough membrane covering of the brain.
MENINGITIS:	Inflammation of the meninges.
MOTOR:	Conveying impulses from reflex or central control centers to the sense organs.
MYOPIA:	Nearsightedness caused by rays of light focusing in front of the retina.
NEURITIS:	Infammation of a nerve.
NEURON:	Basic cell in the nervous system.
OTITIS MEDIA:	Inflammation of the inner ear.
PARASYMPATHETIC:	That part of the autonomic nervous system which pertains to its craniosacral portion.
PERIPHERAL:	Pertaining to the outside or away from the central part of the body.

TERMINOLOGY - concluded

PINNA:	Outer visible part of the ear.
PUPIL:	Opening in the eye which allows light to enter.
RETINA:	Membrane inside the eye which receives the image from the lens and carries it to the brain.
RETINAL DETACHMENT:	Separation of the retina from the middle layer of the eye.
RETINITIS:	Inflammation of the retina.
RHINITIS:	Inflammation of the membranes of the nose (common cold).
RHINOPLASTY:	Corrective surgery on the nose.
RODS:	Special cells in the retina which help with night vision.
SCIATICA:	Pain along the sciatic nerve in the thigh.
SCLERA:	Tough, fibrous, white, outer coat of the eyeball.
SEMICIRCULAR CANALS:	Canals inside the inner ear which contain liquid and nerve endings which are used for balance.
SENSORY:	Conveying impulses from sense organs to the reflex or higher centers.
SINUSITIS:	Inflammation of the sinus.
SYMPATHETIC:	Part of the autonomic nervous system which prepares us for "fight" or "flight".
SYNAPSE:	Region over which an impulse must pass to get from one neuron to the next.
TYMPANIC MEMBRANE:	Eardrum.

POST TEST

Module A

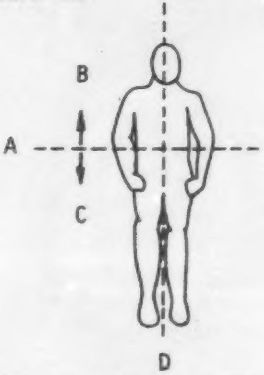
Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. The study of the function of the body is called:

   a. anatomy
   b. organization
   c. physiology
   d. structure

2. In the accompanying diagram, the letter "C" refers to:

   a. transverse
   b. inferior
   c. superior
   d. midline



3. In the same diagram, the letter "A" refers to:

   a. transverse
   b. midline
   c. superior
   d. inferior

4. Groups of several kinds of tissues having a special function are called:

   a. systems
   b. organs
   c. cavities
   d. muscles

5. Muscular, connective, epithelial, and nervous are names referring to:

   a. cells
   b. muscles
   c. systems
   d. tissues

6. Which organ is found in the abdominal cavity?

   a. gallbladder
   b. lung
   c. ovary
   d. ureter

POST TEST - continued

7. A group of cells with similar functions that work together to perform one special function is called a/an:

   a. clump
   b. organ
   c. tissue
   d. system

8. The part of the cell which regulates all the activities of the cell is the:

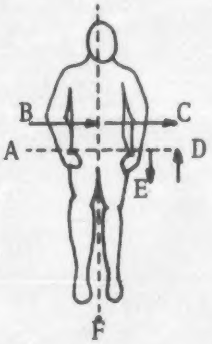
   a. protoplasm
   b. nucleus
   c. membrane
   d. cytoplasm

9. The microscopic unit of structure of the body is the:

   a. tissue
   b. organ
   c. cell
   d. system

10. In the diagram to the right, the letter "C" refers to:

   a. transverse
   b. medial
   c. superior
   d. lateral



11. The letter "F" in the diagram refers to:

   a. medial
   b. midline
   c. transverse
   d. lateral

12. The part of a cell which allows selective substances in and out of the cell is the:

   a. nucleus
   b. cytoplasm
   c. membrane
   d. protoplasm

13. The study of the structure of the body is called:

   a. anatomy
   b. organization
   c. physiology
   d. function

POST TEST - continued

14. Which is found in the cranial cavity?

a. ovary
b. ejaculatory duct
c. pituitary gland
d. adrenal gland

15. The function of the circulatory system is to:

a. support and protect the body
b. supply air for the cells
c. carry oxygen to the cells
d. direct and coordinate body functions

16. The function of the endocrine system is to:

a. direct and coordinate body functions
b. send messages
c. remove wastes
d. protect and regulate heat

17. Two organs found in the respiratory system are:

a. kidney and trachea
b. brain and lungs
c. pharnyx and nose
d. uterus and urethra

18. Two organs found in the gastrointestinal system are:

a. mouth and liver
b. bladder and rectum
c. skin and stomach
d. salivary gland and thymus gland

19. A term used to describe the reproduction process in cells is:

a. membrane
b. sexual
c. mitosis
d. system

20. The muscle which separates the thoracic from the abdominal cavity is the:

a. pericardium
b. diaphragm
c. peritoneum
d. gluteus maximus

POST TEST - concluded

21. The function of the integumentary system is to:

    a. regulate heat and protection
    b. support the body
    c. take in food
    d. direct and coordinate body functions

22. A system is made up of a group of:

    a. tissues
    b. organs
    c. cells
    d. membranes

23. Thin sheets of tissue which line body cavities are called:

    a. systems
    b. cells
    c. membranes
    d. organs

24. Two organs found in the urinary system are the:

    a. urethra and ureter
    b. urethra and scrotum
    c. kidneys and ovary
    d. pancreas and liver

25. The function of the nervous system is to:

    a. take in food
    b. carry messages
    c. support and protect the body
    d. supply air for the cells

ANSWERS TO POST TEST

Module A

1. c
2. b
3. a
4. b
5. d
6. a
7. c
8. b
9. c
10. d
11. b
12. c
13. a
14. c
15. c
16. a
17. c
18. a
19. c
20. b
21. a
22. b
23. c
24. a
25. b

POST TEST

Module B

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. The bone gets its blood supply and nourishment through its covering which is the:

   a. perineum
   b. periosteum
   c. peritoneum
   d. peristalsis

2. The four types of bones are:

   a. long, short, medium, small
   b. flat, long, medium, irregular
   c. long, short, flat, irregular
   d. long, short, large, flat

3. An example of a long bone is the:

   a. humerus
   b. metatarsal
   c. patella
   d. vertebra

4. An example of a short bone is the:

   a. femur
   b. carpal
   c. costal
   d. cranium

5. Which is the correct joint and its example?

   a. ball and socket - elbow
   b. pivot - skull
   c. hinge - hip
   d. gliding - skull

POST TEST - continued

6. The functions of bones are to:
    - a. help regulate body temperature, produce white blood cells, give body shape
    - b. protect internal organs, produce red blood cells, give body shape
    - c. manufacture white blood cells, give body shape, protect
    - d. send messages to the other parts of the body, provide support, regulate temperature

7. The medical term for the collarbone is the:
    - a. scapula
    - b. sternum
    - c. clavicle
    - d. femur

8. The term meaning "moving away from" is:
    - a. extension
    - b. flexion
    - c. adduction
    - d. abduction

9. The type of fracture most common in childhood is:
    - a. greenstick
    - b. twisted
    - c. simple
    - d. compound

10. Bands of fibrous tissue which connect bones at the joints are called:
    - a. tendons
    - b. ligaments
    - c. myeline sheaths
    - d. none of the above

11. The only movable bone in the skull is the:
    - a. maxilla
    - b. mandible
    - c. sinus
    - d. tongue

12. In which part of long bones does the formation of red blood cells take place?
    - a. diaphysis
    - b. yellow bone marrow
    - c. epiphysis
    - d. periosteum

POST TEST - continued

13. Decreasing the angle between two bones is called:
    - a. flexion
    - b. adduction
    - c. rotation
    - d. extention

14. A fracture in which the broken bone penetrates the skin is a:
    - a. multiple fracture
    - b. comminuted fracture
    - c. compound fracture
    - d. complex fracture

15. The functions of muscles are to:
    - a. keep the body erect, move the body, and produce heat
    - b. protect internal organs, produce heat, and produce red blood cells
    - c. stimulate superficial blood vessels to dilate or constrict, lubricate joints

16. White fibrous tissues which connect muscles to bones are:
    - a. ligaments
    - b. cartilages
    - c. periosteum
    - d. tendons

17. The loss of the ability to flex or extend a muscle is called muscle:
    - a. atrophy
    - b. contracture
    - c. periosteum
    - d. tendons

18. Shrinkage of a muscle due to disease is called:
    - a. paralysis
    - b. hypertrophy
    - c. atrophy
    - d. contracture

19. The muscles are referred to as:
    - a. voluntary and involuntary
    - b. stimulated and unstimulated
    - c. involuntary and extended
    - d. paralyzed and active

POST TEST - continued

20. An inflammation of the bone is called:

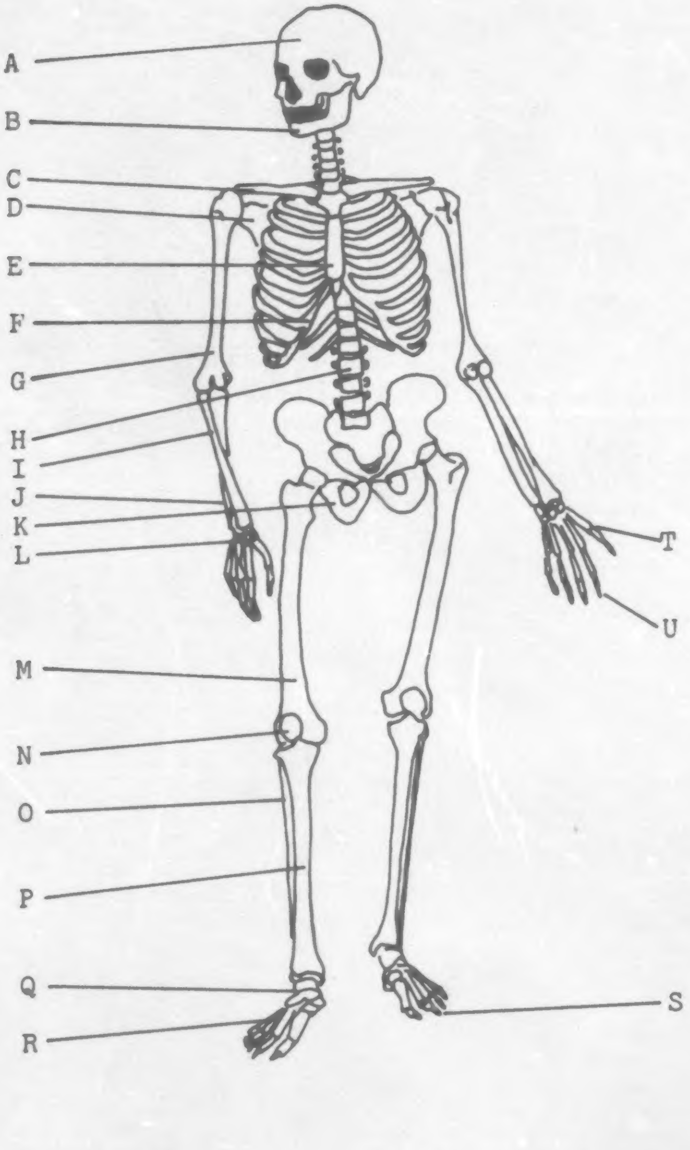
    a. osteoporosis
    b. rickets
    c. osteomyelitis
    d. kyphosis

21. Which is the correct joint and example?

    a. shoulder - hinge
    b. wrist - pivot
    c. neck - ball-and-socket
    d. elbow - hinge

POST TEST - continued

Directions: Identify and write the names of the twenty-one bones on the lines provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.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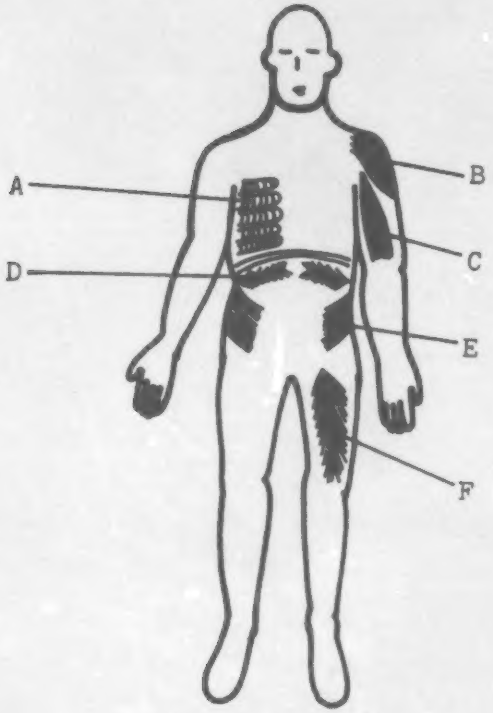
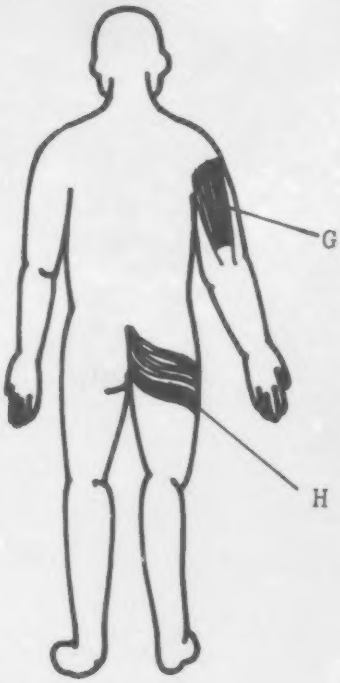
POST TEST - concluded

Directions: Identify and write the names of five of the eight muscles. Use the blank lines provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.





ANSWERS TO POST TEST

Module B

1. b
2. c
3. a
4. b
5. b
6. b
7. c
8. d
9. a
10. b
11. b
12. c
13. a
14. c
15. a
16. d
17. b
18. c
19. a
20. c
21. d

BONES

A. Cranium
B. Mandible
C. Clavicle
D. Scapula
E. Sternum
F. Costals
G. Humerus
H. Vertebrae
I. Radius
J. Ulna
K. Pelvis
L. Carpals
M. Femur
N. Patella
O. Fibula
P. Tibia
Q. Tarsals
R. Metatarsals
S. Phalanges
T. Metacarpals
U. Phalanges

MUSCLES

A. intercostal
B. deltoid
C. biceps
D. diaphragm
E. abdominal muscles
F. femoral muscles
G. triceps
H. gluteus maximus

POST TEST

Module C

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that answer on your answer sheet. DO NOT WRITE ON THIS TEST.

1. One function of the skin is to:

    a. regulate heat
    b. produce white blood cells
    c. regulate digestion
    d. shape the body

2. The true skin of the body is the:

    a. dermis
    b. epidermis
    c. growth layer
    d. integumentary system

3. The vitamin manufactured in the skin is:

    a. Vitamin A
    b. Vitamin B
    c. Vitamin C
    d. Vitamin D

4. One of the functions of the body hair is to:

    a. manufacture vitamins
    b. secrete perspiration
    c. filter out dust
    d. soften the skin

5. One reason why skin color changes is:

    a. the amount of melanin in the epidermis
    b. the amount of fat in the subcutaneous tissue
    c. the color of hair and eyes
    d. closeness of nerve endings to the surface of the skin

POST TEST - continued

6. The sebaceous glands secrete a substance which helps to:

   a. make the skin waterproof
   b. increase the tactile sense
   c. stabilize skin color (pigment)
   d. make the skin flexible

7. When the body needs cooling, the skin blood vessels allow heat to escape by:

   a. contracting
   b. constricting
   c. dilating
   d. flexing

8. If the skin receives too little oxygen, it will be a:

   a. pale color (pallor)
   b. reddish color (dilated capillaries)
   c. bluish color (cyanotic)
   d. greenish color (bile)

9. The skin helps to regulate body temperature by:

   a. evaporation of perspiration
   b. growing new and thicker hair
   c. increased awareness of tactile sense
   d. producing vitamins

10. "Pores" in the skin are:

   a. hair follicles
   b. openings of sweat ducts
   c. sensory nerve endings
   d. openings of oil glands

11. A third degree burn extends to the:

   a. outer layer of skin only
   b. dermis and epidermis only
   c. dermis, epidermis, and underlying tissues
   d. internal organs

12. Athlete's foot is a contagious infection caused by a:

   a. bacteria
   b. virus
   c. fungus
   d. fly

POST TEST - continued

13. Death of tissue cells due to lack of blood supply to the area is called:

    a. acne
    b. gangrene
    c. paralysis
    d. eczema

14. A term which means "profuse sweating" is:

    a. hemorrhage
    b. sebaceous
    c. peritoneum
    d. diaphoresis

15. The function of fingernails and toenails is to:

    a. look pretty
    b. aid in dexterity
    c. manufacture vitamins
    d. store vitamins

16. Nerve endings are found:

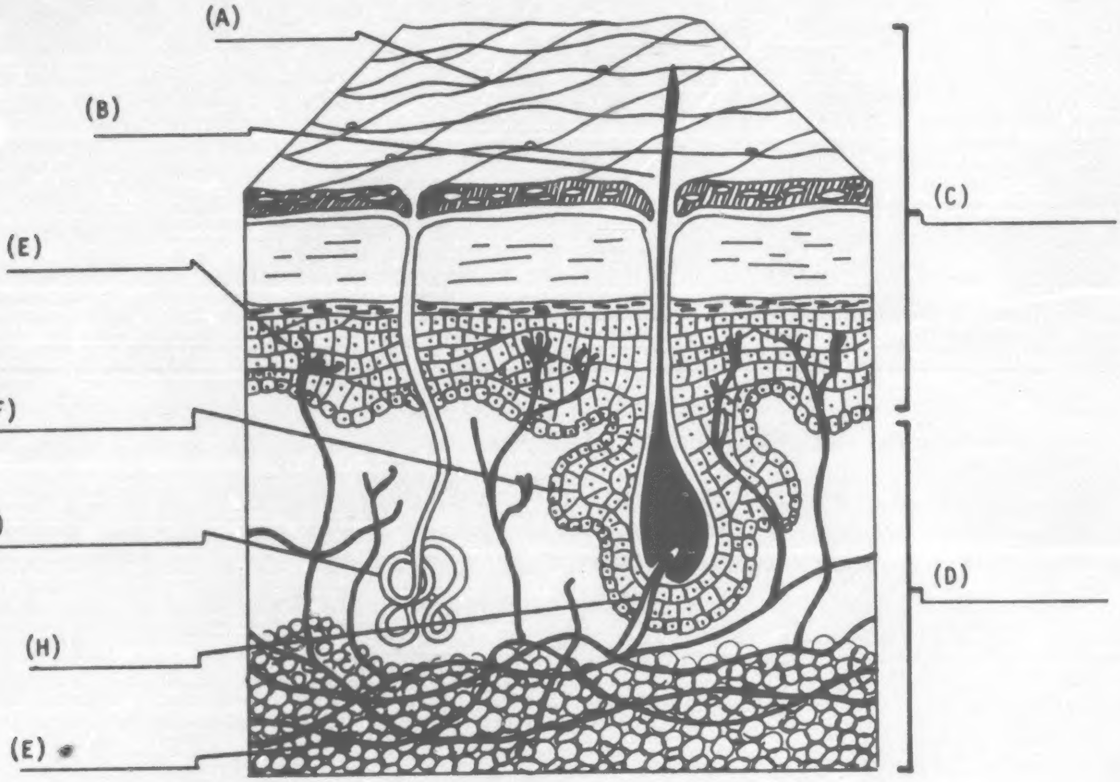
    a. in all parts of the skin
    b. on the hands and feet only
    c. from the waist up only
    d. from the neck up only

17. The term "sudoriferous" refers to the:

    a. oil glands
    b. outer layer of skin
    c. inner layer of skin
    d. sweat glands

POST TEST - concluded

Directions: Identify and write the names of the eight parts of the skin. Use the blank lines provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.



ANSWERS TO POST TEST

Module C

1. a
2. a
3. d
4. c
5. a
6. a
7. c
8. c
9. a
10. b
11. c
12. c
13. b
14. d
15. b
16. a
17. d

PARTS OF THE SKIN

A. pores
B. hair
C. epidermis
D. dermis
E. blood vessel
F. sebaceous or oil gland
G. sweat gland
H. nerve

POST TEST

Module D

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. The function of the pancreas is to:

   a. secrete bile
   b. assist with digestion by storing mineral salts
   c. manufacture juices that aid in digestion
   d. absorb water

2. The second part of the small intestine is called the:

   a. cecum
   b. duodenum
   c. pylorus
   d. jejunum

3. The valve between the stomach and the duodenum is the:

   a. pylorus
   b. pancreas
   c. peristalsis
   d. peritoneum

4. Which is considered an accessory organ of the digestive system?

   a. mouth
   b. salivary glands
   c. jejunum
   d. rectum

5. The process of changing solid food into a liquid form which can be absorbed by the body cells is called:

   a. peristalsis
   b. swallowing
   c. digesting
   d. salivating

POST TEST - continued

6. Which is considered an accessory organ of the digestive system?

   a. stomach
   b. esophagus
   c. mouth
   d. liver

7. Bile which is manufactured by the liver is necessary to:

   a. digest carbohydrates
   b. give feces a green color
   c. digest fats
   d. digest proteins

8. The rhythmic contraction of muscles which push the food along the digestive tract is known as:

   a. mastication
   b. peristalsis
   c. pylorus
   d. swallowing

9. The majority of food absorption takes place in the:

   a. stomach
   b. liver
   c. small intestine
   d. large intestine

10. The primary product absorbed from the large intestine is:

    a. water
    b. calories
    c. nutrients
    d. enzymes

11. The absorption of food and nutrients into the bloodstream is made possible by:

    a. peristalsis
    b. villi
    c. mucous membrane
    d. liquids

12. Which is a major organ of the digestive system?

    a. esophagus
    b. tongue
    c. pancreas
    d. liver

POST TEST - continued

13. A function of the tongue is to assist in:

    a. producing enzymes
    b. absorbing nutrients
    c. digesting proteins
    d. chewing and swallowing food

14. The semi-liquid food which results from the churning action of the stomach is called:

    a. emesis
    b. hydrochloric acid
    c. chyme
    d. papillae

15. The appendix is attached to which portion of the large intestine?

    a. cecum
    b. ascending colon
    c. transverse colon
    d. decending colon

16. A function of the rectum is to:

    a. digest fat
    b. collect waste material
    c. digest carbohydrates
    d. absorb nutrients

17. The function of the gallbladder is to:

    a. manufacture bile
    b. digest fats
    c. store bile
    d. manufacture hydrochloric acid

18. The term meaning "inflammation of the intestines" is:

    a. diarrhea
    b. gastritis
    c. enteritis
    d. hepatitis

19. A dilation of a vein in the mucous membrane of the rectum is called a/an:

    a. hernia
    b. hemorroid
    c. ulceration
    d. colitis

POST TEST - continued

20. Inflammation of the gallbladder is called:

    a. cholecystectomy
    b. cholelithotomy
    c. colitis
    d. cholecystitis

21. The lining of the entire digestive tract is:

    a. cytoplasm
    b. mucous membrane
    c. villi
    d. papillae

22. Another name for the large intestine is:

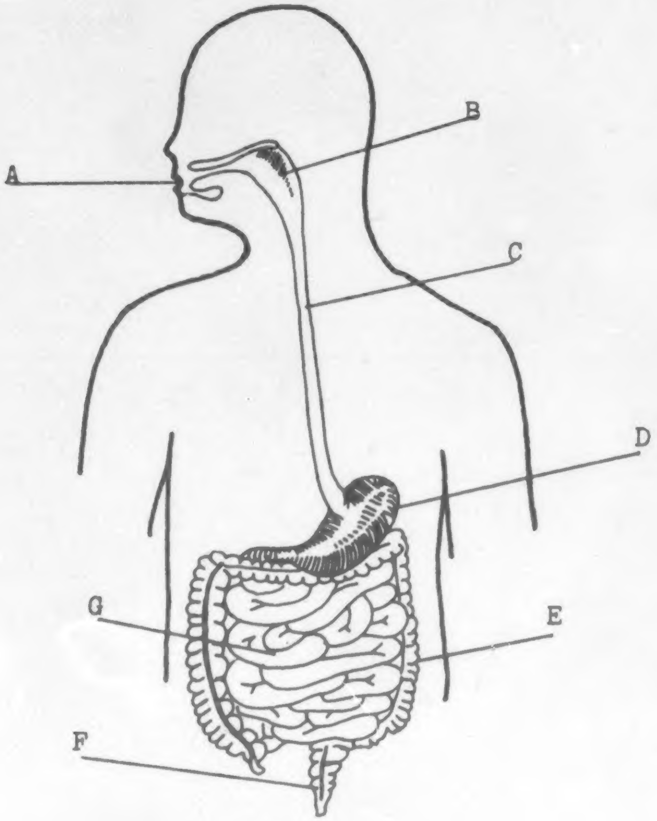
    a. appendix
    b. duodenum
    c. colon
    d. pylorus

23. The term for frequent watery stools is:

    a. constipation
    b. cholecystitis
    c. diarrhea
    d. pastritis

POST TEST - concluded

Directions: Identify and write the names of the seven major parts of the digestive system. Use the lines provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.



ANSWERS TO POST TEST

Module D

1. c
2. d
3. a
4. b
5. c
6. d
7. c
8. b
9. c
10. a
11. b
12. a
13. d
14. c
15. a
16. b
17. c
18. c
19. b
20. d
21. b
22. c
23. c

MAJOR PARTS OF THE DIGESTIVE SYSTEM

A. mouth

B. pharynx

C. esophagus

D. stomach

E. colon or large intestine

F. rectum

G. small intestine

POST TEST

Module E

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. The largest artery in the body is the:

   a. vena cava
   b. aorta
   c. femoral
   d. carotid

2. The smooth lining inside of the heart is called the:

   a. pericardium
   b. endometrium
   c. myocardium
   d. endocardium

3. An abnormal collection of fluid in the tissues is known as:

   a. diuresis
   b. decompensation
   c. edema
   d. angina

4. A blood clot that was formed somewhere else in the body and then travels to the heart is called:

   a. an embolism
   b. a thrombus
   c. an eccymosis
   d. angina pectoris

5. The term for high blood pressure is:

   a. hypertension
   b. hypotension
   c. diastolic
   d. hypertrophies

POST TEST - continued

6. A heart attack may be called:

   a. myocardial infarction
   b. coronary occlusion
   c. coronary thrombosis
   d. all of the above

7. The blood pressure reading that indicates the greatest amount of pressure in the heart is called:

   a. ventricle
   b. systolic
   c. syncope
   d. diastolic

8. A normal, average arterial blood pressure is:

   a. 140/70
   b. 90/56
   c. 120/80
   d. 130/98

9. The average pulse rate for adults is:

   a. 80-120 per minute
   b. 40-80 per minute
   c. 72-90 per minute
   d. 60-80 per minute

10. Which organ is considered part of the circulatory system?

    a. liver
    b. kidney
    c. pancreas
    d. spleen

11. The vessels which carry blood away from the heart are called:

    a. arteries
    b. veins
    c. lymphatics
    d. capillaries

12. The organ which is called the body's "personal blood bank" is the:

    a. liver
    b. heart
    c. spleen
    d. portal circulation

POST TEST - continued

13. The liquid portion of the blood is called:

    a. fibrinogen
    b. plasma
    c. leukocyte
    d. cells

14. The number of pulse beats per minute is known as the:

    a. rhythm
    b. rate
    c. force
    d. tension

15. The amount of resistance the artery gives when the finger is pressing against it is called:

    a. rhythm
    b. rate
    c. force
    d. tension

16. The function of white blood cells is to:

    a. carry oxygen
    b. help in the clotting of the blood
    c. protect against infection
    d. keep the blood pressure down

17. White blood cells are called:

    a. leukocytes
    b. platelets
    c. erythrocytes
    d. plasma

18. Anemia may be caused by:

    a. too few red blood cells
    b. too few white blood cells
    c. too many red blood cells
    d. too many white blood cells

19. The cells in the blood which carry carbon dioxide are the:

    a. leukocytes
    b. erythrocytes
    c. monocytes
    d. lymphocytes

POST TEST - continued

20. The formation of white blood cells takes place in the:

    a. pancreas
    b. stomach
    c. liver
    d. lymph nodes

21. The primary function of platelets in the blood is to:

    a. carry oxygen to all the body cells
    b. assist in the clotting of the blood
    c. produce white blood cells
    d. carry on phagocytosis

22. A condition in which the number of abnormal white blood cells increases tremendously is called:

    a. anemia
    b. leukemia
    c. leukocytosis
    d. phagocytosis

23. The primary function of lymph nodes is to:

    a. assist in draining interstitial fluid
    b. enlarge as a signal of disease
    c. filter bacteria out of our system
    d. produce platelets

24. One function of the lymphatic system is to:

    a. manufacture some of the white blood cells
    b. manufacture some of the platelets
    c. carry oxyhemoglobin to the cells
    d. manufacture some of the red blood cells

25. The vessels which carry the blood back to the heart are called:

    a. arteries
    b. veins
    c. lymphatics
    d. capillaries

26. "Hardening of the arteries" is another name for:

    a. arteriosclerosis
    b. congestive heart failure
    c. coronary heart attack
    d. cerebral vascular attack

POST TEST - continued

27. "Angina" can be brought on by exertion which causes constriction of the:

    a. aorta
    b. femoral arteries
    c. vena cava
    d. coronary arteries

28. "C.V.A." is the same as:

    a. cancer
    b. a stroke
    c. a heart attack
    d. congestive vascular attack

29. The lower chambers of the heart are called:

    a. septums
    b. ventricles
    c. atriums
    d. valves

30. The blood flows from the right ventricle directly into the:

    a. pulmonary vein
    b. pulmonary artery
    c. left atrium
    d. left ventricle

31. The blood from the left atrium flows directly into the:

    a. right atrium
    b. pulmonary artery
    c. aorta
    d. left ventricle

32. The blood leaves the heart by way of the:

    a. superior vena cava
    b. inferior vana cava
    c. aorta
    d. left atrium

33. The largest vein in the body is the:

    a. aorta
    b. atrium
    c. vena cava
    d. renal vein

POST TEST - continued

34. A clot which forms at the site of the blockage of a vessel is called a/an:

    a. thrombus
    b. embolus
    c. coronary occlusion
    d. infarct

35. Portal circulation is the blood which flows through the:

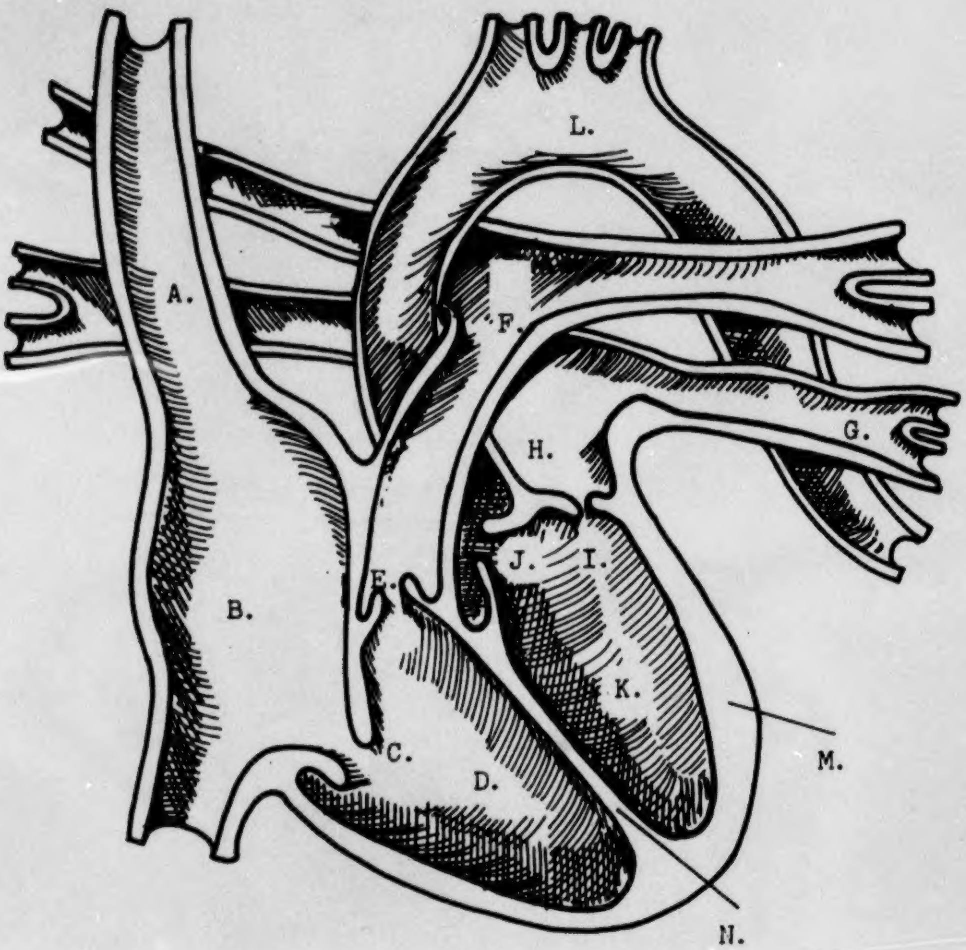
    a. heart
    b. lungs
    c. liver
    d. kidneys

36. The blood enters the left atrium by way of the:

    a. pulmonary artery
    b. pulmonary vein
    c. aorta
    d. vena cava

POST TEST - concluded

Directions: Identify and write the names of the fourteen parts of the heart. Use the lines provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.



ANSWERS TO POST TEST

Module E

1. b
2. d
3. c
4. a
5. a
6. d
7. b
8. c
9. d
10. d
11. a
12. c
13. b
14. b
15. d
16. c
17. a
18. a
19. b
20. d
21. b
22. b
23. c
24. a
25. b
26. a
27. d
28. b
29. b
30. b
31. d
32. c
33. c
34. a
35. c
36. b

PARTS OF THE HEART

A. superior vena cava
B. right atrium
C. tricuspid
D. right ventricle
E. pulmonary
F. pulmonary artery
G. pulmonary vein
H. left atrium
I. mitral valve (bicuspid)
J. aortic valve
K. left ventricle
L. aorta
M. septum
N. myocardium

POST TEST

Module F

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. The anatomical name for the windpipe is the:

    a. trachea
    b. pharynx
    c. larynx
    d. bronchi

2. Laryngitis is the name for inflammation of the:

    a. lymph nodes
    b. throat
    c. voice box
    d. windpipe

3. The left lung has how many lobes?

    a. one
    b. two
    c. three
    d. four

4. The amount of tidal air exchanged in each normal breath is:

    a. 1000 ml.
    b. 3500 ml.
    c. 500 ml.
    d. 2000 ml.

5. The tonsils and the adenoids are located in the:

    a. sinuses
    b. larynx
    c. nose
    d. pharynx

POST TEST - continued

6. The lungs are covered with a double membrane called:

   a. pneumo
   b. pleura
   c. pharynx
   d. bronchioles

7. The breathing rate depends on the amount of what in the blood?

   a. oxygen
   b. carbon dioxide
   c. hemoglobin
   d. erythrocytes

8. Oxygen and carbon dioxide are carried through the general circulation by:

   a. erythrocytes
   b. platelets
   c. phagocytes
   d. leukocytes

9. The term "dyspnea" refers to:

   a. intermittent breathing
   b. difficult breathing
   c. lack of respiration
   d. breathing in a sitting position only

10. What happens to air as it passes through the nasal cavity?

    a. it is warmed
    b. it is filtered
    c. it is moistened
    d. all of the above

11. If the blood in the dermis contains very little oxygen, it will give the skin a bluish color called:

    a. cyanide
    b. blue baby
    c. cyanosis
    d. melanin

12. During expiration, the:

    a. chest becomes larger
    b. diaphragm and the intercostals contract
    c. air moves in
    d. waist gets bigger

POST TEST - continued

13. The stimulant for the respiratory center is:

    a. carbon dioxide
    b. lactic acid
    c. oxygen
    d. none of the above

14. The "C" shaped cartilage in the trachea functions to:

    a. warm the air
    b. prevent collapse
    c. protect the larynx
    d. keep food out

15. It is at the level of the alveoli that the:

    a. air is filtered
    b. air is warmed
    c. exchange of oxygen and carbon dioxide takes place
    d. exchange of hydrogen takes place

16. Hyperventilation means:

    a. more air moving in and out of the lungs per minute
    b. intermittent breathing
    c. breathing more easily in a sitting postion
    d. a small amount of air moving in and out of the lung per minute

17. When you inhale, the diaphragm and the intercostal muscles:

    a. relax
    b. contract
    c. get larger
    d. flex

18. The term "orthopnea" refers to:

    a. rapid breathing
    b. difficult breathing
    c. breathing relieved only by sitting up
    d. lack of breathing

19. Sinuses are:

    a. the organs of smell
    b. located in the back of the throat
    c. cavities within bone
    d. cavities within the lungs

POST TEST - continued

20. The gas that makes up most of the air is:

    a. oxygen
    b. nitrogen
    c. carbon dioxide
    d. hydrogen

21. When you exhale, carbon dioxide:

    a. increases
    b. decreases
    c. stays the same
    d. causes bad breath

22. A procedure used to inject air into the pleural space is called:

    a. emphysema
    b. pneumothorax
    c. Cheyne-Stokes
    d. anoxia

23. A disease that can be spread by an infected person coughing and sneezing is called:

    a. pleurisy
    b. asthma
    c. emphysema
    d. tuberculosis

24. A piece of cartilage that closes the larynx when we swallow is called:

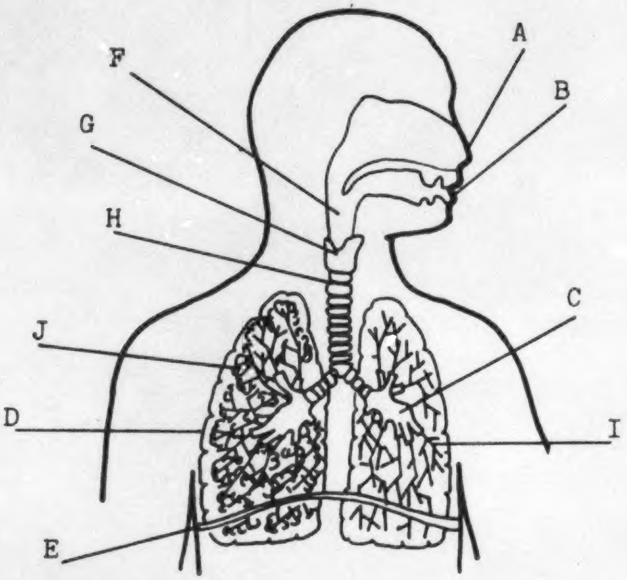
    a. the glottis
    b. the sinus
    c. the "Adam's apple"
    d. the epiglottis

25. The disease which causes the greatest loss of man hours each year is:

    a. emphysema
    b. a cold
    c. asthma
    d. anoxia

POST TEST - concluded

Directions: Identify and write the names of the ten parts of the respiratory system. Use the lines provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.



ANSWERS TO POST TEST

Module F

1. a
2. c
3. b
4. c
5. d
6. b
7. b
8. a
9. b
10. d
11. c
12. d
13. a
14. b
15. c
16. a
17. b
18. c
19. c
20. b
21. a
22. b
23. d
24. d
25. b

PARTS OF THE RESPIRATORY SYSTEM

A. nose
B. mouth
C. bronchus
D. lung
E. diaphragm
F. pharynx
G. larynx
H. trachea
I. bronchioles
J. alveoli

POST TEST

Module G

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. If the kidney is unable to make urine, the patient suffers from:
    a. retention
    b. suppression
    c. renal calculi
    d. oliguria

2. A commonly used term meaning "urination" is:
    a. defecation
    b. exhalation
    c. voiding
    d. catheterization

3. The urinary bladder functions to:
    a. secrete urine
    b. collect urine
    c. concentrate urine
    d. dilute urine

4. How much of urine is water?
    a. 80%
    b. 96%
    c. 50%
    d. 67%

5. Inflammation of the bladder is called:
    a. nephritis
    b. uretitis
    c. claculi
    d. cystitis

6. An excessive amount of urine output is called:
    a. anuria
    b. polyuria
    c. oliguria
    d. dysuria

POST TEST - continued

7. The smallest unit of structure in the kidney which produces urine is:

   a. the nephron
   b. the neuron
   c. the glomerulus
   d. Bowman's capsule

8. Renal calculi are:

   a. polyps in the pelvis of the kidney
   b. strictures of the ureter
   c. stones in the kidney
   d. stones in the uterus

9. The kidneys function to:

   a. excrete urine
   b. retain urine and pass it on to the bladder
   c. filter the blood and secrete urine
   d. store urine

10. Urine passes from the kidney through the __________ and collects in the bladder.

    a. ureter
    b. urethra
    c. meatus
    d. uterus

11. Your patient is very restless and upset and complains of pain in the bladder and inability to urinate for twelve hours even though an effort to do so has been made several times. This patient's condition is commonly called:

    a. edema
    b. retention
    c. suppression
    d. renal calculi

12. Nephritis is:

    a. inflammation and infection of the bladder
    b. inflammation of the kidneys
    c. inflammation of the ureter
    d. inflammation of the urethra

13. A symptom of diseases common to the kidneys characterized by excess fluid in the tissues is:

    a. renal calculi
    b. hydrointegument
    c. edema
    d. retention

POST TEST - continued

14. The process in which water and dissolved substances come back from the kidney tubules and reenter the bloodstream is called:

    a. filtration
    b. reabsorption
    c. secretion
    d. production

15. In which portion of the kidney is urine produced?

    a. renal
    b. cortex
    c. medulla
    d. pelvis

16. The approximate amount of urine produced each day in the average adult is:

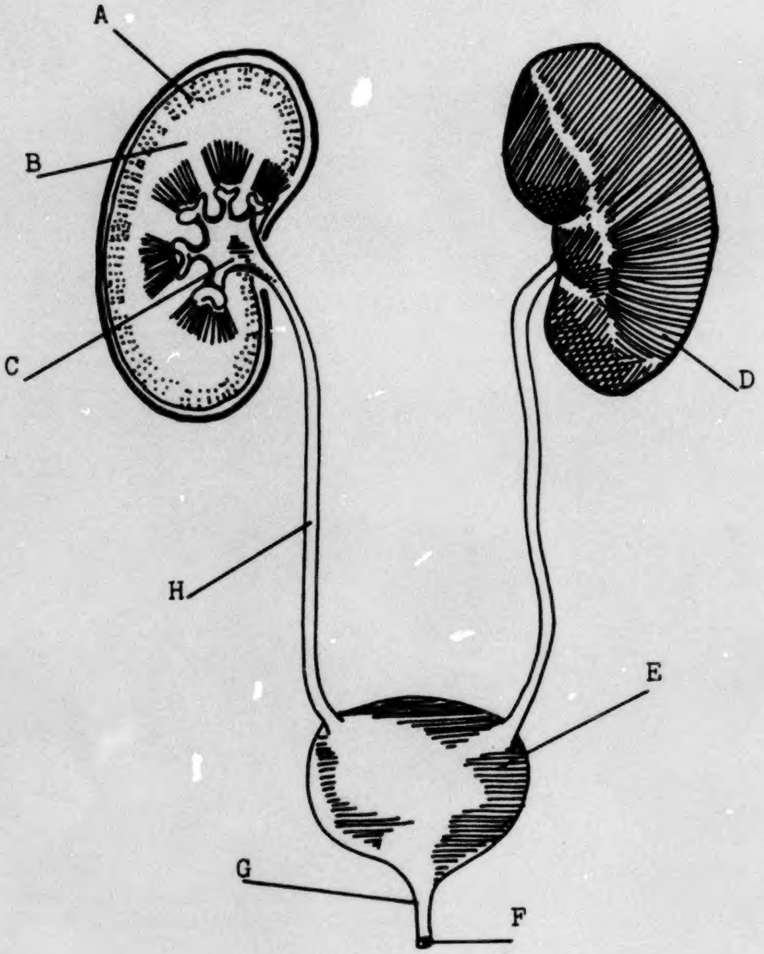
    a. 500 - 1000 cc
    b. 1000 - 1500 cc
    c. 1500 - 2000 cc
    d. 2000 - 2500 cc

17. Painful urination is referred to as:

    a. oliguria
    b. polyuria
    c. anuria
    d. dysuria

POST TEST - concluded

Directions: Identify and write the names of the five parts of the urinary system and the three main parts of the kidney. Use the lines provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.



ANSWERS TO POST TEST

Module G

1. b
2. c
3. b
4. b
5. d
6. b
7. a
8. c
9. c
10. a
11. b
12. b
13. c
14. b
15. b
16. c
17. d

PARTS OF THE URINARY SYSTEM

A. cortex
B. medulla
C. renal pelvis
D. kidney
E. bladder
F. urinary meatus
G. urethra
H. ureter

POST TEST

Module H

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. The hormones produced by the endocrine glands are carried to other parts of the body by the:

    a. endocrine system
    b. ducts
    c. bloodstream
    d. lymphatics

2. One function of the endocrine system is to:

    a. keep the blood flowing
    b. regulate metabolism
    c. help digest fats
    d. produce tears

3. The gland that is known as the "master gland" is the:

    a. pituitary
    b. pineal
    c. parathyroid
    d. gonad

4. The gland that regulates the rate of growth of the body is the:

    a. gonad
    b. adrenal
    c. thyroid
    d. pituitary

5. Water and salt usage by the body is regulated by the:

    a. gonads
    b. adrenals
    c. parathyroids
    d. islands of Langerhans

6. The function of the parathyroid gland is to:

    a. control water and salt balance
    b. control production of insulin
    c. control use of calcium
    d. control diuretic hormones

POST TEST - continued

7. The gland which has both internal and external secretions is the:

   a. pancreas
   b. thyroid
   c. pituitary
   d. thymus

8. The substance necessary for production of thyroxin by the thyroid gland is:

   a. salt
   b. iodine
   c. sugar
   d. insulin

9. The male sex glands are called:

   a. testes
   b. ovaries
   c. adrenals
   d. estrogens

10. The hormone secreted (produced) by the male sex glands is:

    a. estrogen
    b. testosterone
    c. progesterone
    d. leutinizing hormone

11. A hypofunctioning of the pituitary gland may cause:

    a. gigantism
    b. menstrual disturbance
    c. diabetes mellitus
    d. increased metabolic rate

12. With too little blood calcium, nerve cells may become overactive and bombard muscles with so many impulses that the muscles go into spasms. This condition is called:

    a. atrophy
    b. tetany
    c. hypertrophy
    d. contracture

13. When the body is subjected to stress, either physically or mentally, the gland which will start secreting its hormone is the:

    a. islands of Langerhans
    b. anterior pituitary
    c. adrenal medulla
    d. adrenal cortex

POST TEST - continued

14. The antidiuretic hormone secreted by the pituitary is important in the prevention of:

    a. Addison's disease
    b. acromegaly
    c. diabetes insipidus
    d. dwarfism

15. The function of the lacrimal glands is to:

    a. cool the body
    b. moisten food
    c. clean the eyes
    d. utilize sugar

16. The femal gonads are called:

    a. testes
    b. zygotes
    c. fallopians
    d. ovaries

17. A disease which results from a hypersecretion of glucocorticoid is:

    a. Down's syndrome
    b. diabetes insipidus
    c. Cushing's syndrome
    d. tetany

18. A prefix meaning "gland" is:

    a. arthro
    b. myo
    c. adeno
    d. nephro

19. An exocrine gland is a:

    a. duct gland
    b. ductless gland
    c. pituitary gland
    d. adrenal gland

20. Which of the following is a duct gland?

    a. pancreas
    b. thyroid
    c. pituitary
    d. adrenal

POST TEST - continued

21. A chemical substance which is conveyed through the blood to another part of the body is called:

    a. nitrogen
    b. bacteria
    c. oxygen
    d. hormone

22. When too little insulin is produced, it results in:

    a. hypoglycemia
    b. hyperglycemia
    c. hypotension
    d. hypertension

23. A function of the endocrine system is to:

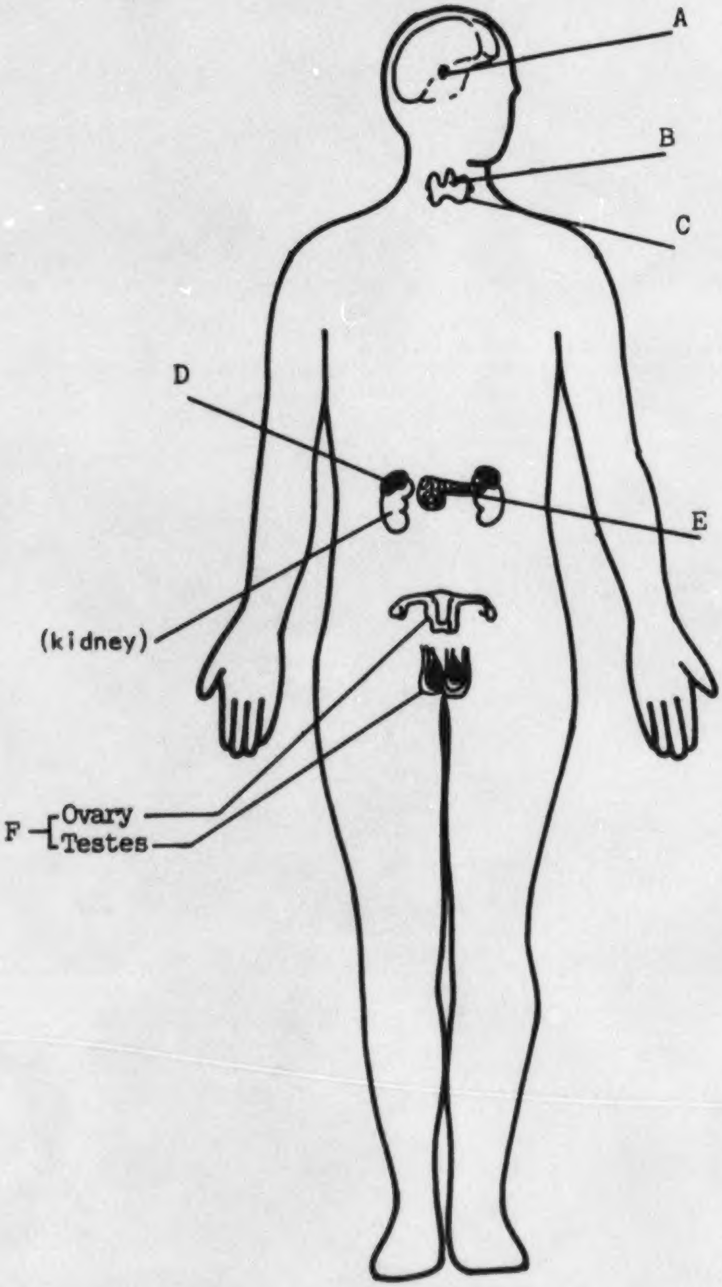
    a. eliminate wastes
    b. help digest carbohydrates
    c. help our bodies handle stress
    d. fight infection

24. The adrenal glands are located:

    a. in the back of the stomach
    b. over the ovaries and testes
    c. over each kidney
    d. near the thyroid gland

POST TEST - concluded

Directions: Identify and write the names of the six endocrine glands. Use the lines provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.


A
B
C
D
E
(kidney)
F
Ovary
Testes

ANSWERS TO POST TEST

Module H

1. c
2. b
3. a
4. d
5. b
6. c
7. a
8. b
9. a
10. b
11. b
12. b
13. c
14. c
15. c
16. d
17. c
18. c
19. a
20. a
21. d
22. b
23. c
24. c

PARTS OF THE ENDOCRINE SYSTEM

A. pituitary

B. thyroid

C. parathyroid

D. adrenal

E. pancreas (islands of Langerhans)

F. gonads

POST TEST

Module I

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. The lining of the uterus is called the:
    - a. endometrium
    - b. myometrium
    - c. menstruation
    - d. endometriosis

2. The process by which the ovary discharges an ovum is called:
    - a. menstruation
    - b. pregnancy
    - c. ovulation
    - d. endometriosis

3. The number of sperm needed to produce a zygote is:
    - a. one
    - b. two million
    - c. three
    - d. one hundred

4. The union of the ovum and the sperm is called:
    - a. unionization
    - b. fertilization
    - c. contraction
    - d. ejaculation

5. The duration of the normal menstrual cycle is:
    - a. five days
    - b. twelve to fourteen days
    - c. thirty days
    - d. twenty-eight days

6. The loose fitting skin which covers the end of the penis and is removed during circumcision is called:
    - a. glans
    - b. vas deferens
    - c. foreskin
    - d. prostate

POST TEST - continued

7. Menstruation is the shedding of unneeded:

   a. endometruim
   b. myometrium
   c. ovum
   d. menarche

8. The unborn baby at one month is called:

   a. a zygote
   b. a fetus
   c. an embryo
   d. a fertilized egg

9. Testosterone is secreted by the:

   a. prostate
   b. seminal vesicle
   c. epididymis
   d. testes

10. The gland which often causes urinary problems in older men is the:

    a. bartholin gland
    b. prostate gland
    c. bulbourethral gland
    d. none of the above

11. The female sex cell is called:

    a. estrogen
    b. ovum
    c. progesterone
    d. gonad

12. Fertilization of a female egg by the sperm usually takes place in the:

    a. vagina
    b. fundus
    c. fallopian tube
    d. cervix

13. How many mature sex cells do the ovaries produce each month?

    a. one
    b. two
    c. one hundred
    d. hundreds of millions

POST TEST - continued

14. The testes are suspended in a sac called the:
    - a. bulbourethral gland
    - b. scrotum
    - c. bag
    - d. prostate gland

15. A conception which occurs at a location other than the usual one is referred to as:
    - a. an ectopic pregnancy
    - b. a premature pregnancy
    - c. an incomplete pregnancy
    - d. an illegitimate pregnancy

16. The duct in the male system that passes into the pelvic cavity from the scrotum is the:
    - a. gonads
    - b. vas deferens
    - c. seminal vesicle
    - d. ejaculatory duct

17. The structure in the female which is compared to the penis in the male is the:
    - a. labia majora
    - b. labia minora
    - c. vagina
    - d. clitoris

18. Lactation means the:
    - a. start of menstruation
    - b. end of menstruation
    - c. secretion of milk
    - d. secretion of water

19. Estrogen is secreted by the ovaries during the:
    - a. last five days of the menstrual cycle
    - b. menstrual flow
    - c. nine days following the menstrual flow
    - d. twentieth day of the menstrual cycle

20. The removal of a testicle is called:
    - a. an oophorectomy
    - b. a salpingectomy
    - c. an orchectomy
    - d. a mastectomy

POST TEST - continued

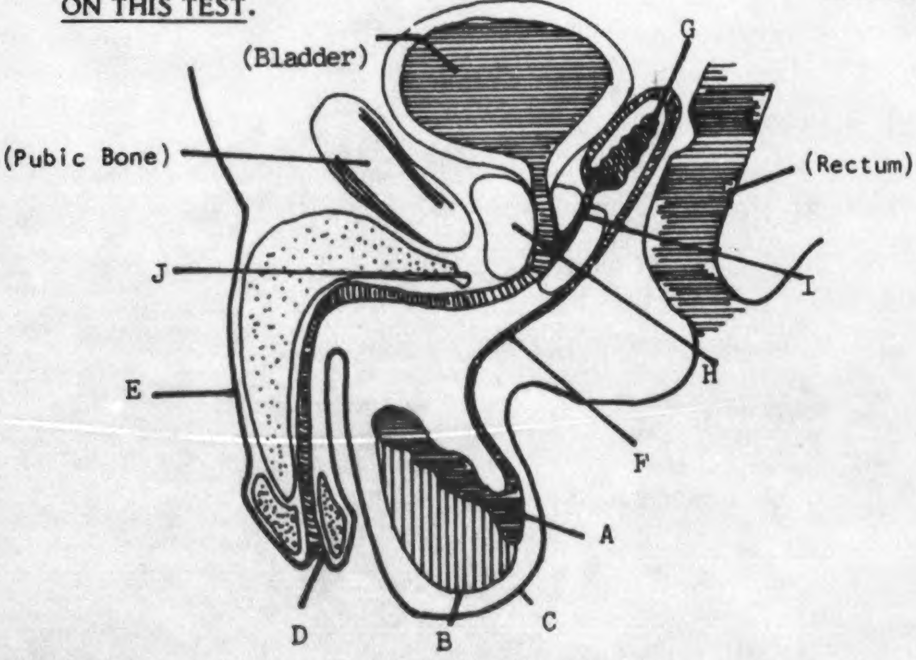
21. A term meaning difficult or painful menstruation is:
    - a. dysmenorrhea
    - b. amenorrhea
    - c. menorrhagia
    - d. dysuria

22. An inflammation of the fallopian tube is called:
    - a. mastitis
    - b. prostatitis
    - c. salpingitis
    - d. cystitis

23. One end of the fallopian tube is attached to the uterus and the other end is:
    - a. open to the abdominal cavity
    - b. attached to the ovaries
    - c. attached to the bladder
    - d. attached to the large intestine

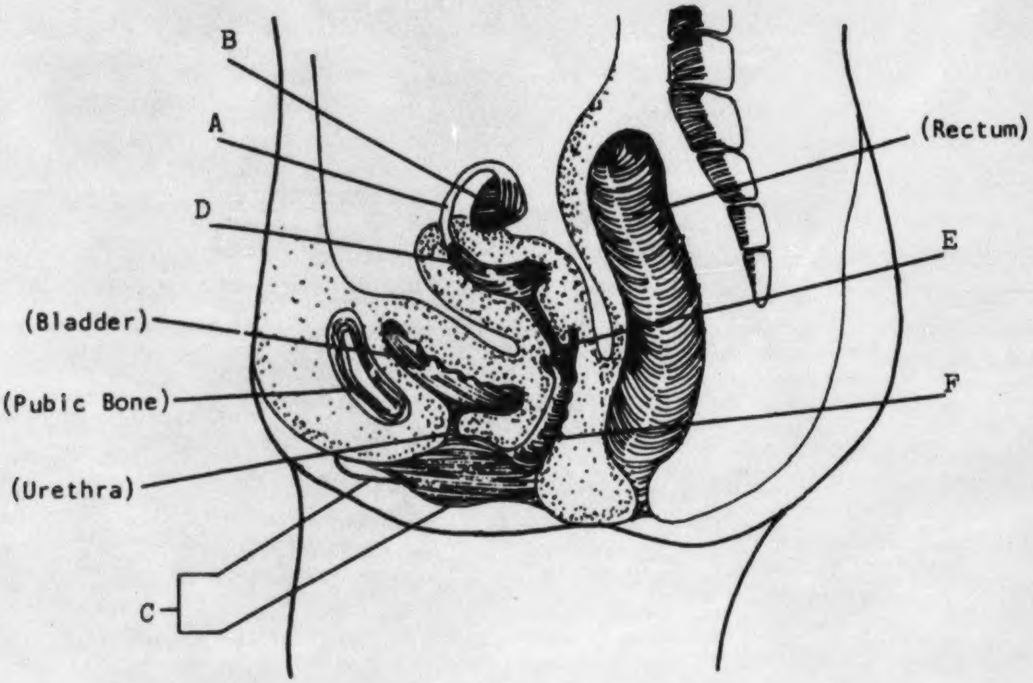
24. The ovum and the sperm are referred to as:
    - a. embryos
    - b. gametes
    - c. fetuses
    - d. menstruation

Directions: Identify and write the names of the ten parts of the male reproductive system. Use the lines at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.



POST TEST - concluded

Directions: Identify and write the names of the six parts of the female reproductive system. Use the lines provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.


B
A
D
(Bladder)
(Pubic Bone)
(Urethra)
C
(Rectum)
E
F

ANSWERS TO POST TEST

Module I

1. a
2. c
3. a
4. b
5. d
6. c
7. a
8. c
9. d
10. b
11. b
12. c
13. a
14. b
15. a
16. b
17. d
18. c
19. c
20. c
21. a
22. c
23. a
24. b

MALE REPRODUCTIVE SYSTEM

A. epididymis
B. testis
C. scrotum
D. urethra
E. penis
F. vas deferens
G. seminal vesicle
H. prostate gland
I. ejaculatory duct
J. Cowper's gland

FEMAL REPRODUCTIVE SYSTEM

A. fallopian tube
B. ovary
C. vulva
D. uterus
E. cervix
F. vagina

POST TEST

Module J1

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. The brain and the spinal cord make up the:

   a. peripheral nervous system
   b. central nervous system
   c. autonomic nervous system
   d. sympathetic nervous system

2. The nerve cell is called:

   a. a nephron
   b. an axon
   c. a neuron
   d. a dendrite

3. All mental activities such as thinking and interpreting sensations are carried out by the:

   a. cerebellum
   b. cerebrum
   c. brain stem
   d. medulla

4. The portion of the brain concerned with body balance and coordination is the:

   a. brain stem
   b. cerebral cortex
   c. cerebellum
   d. cerebrum

5. Pulling your hand away from something hot is an example of:

   a. voluntary activity
   b. autonomic activity
   c. peripheral activity
   d. reflex activity

6. Voluntary movements such as writing come about through the:

   a. sympathetic nerve fibers
   b. peripheral nervous system
   c. parasympathetic nerve fibers
   d. autonomic nervous system

POST TEST - continued

7. The name of the places of contact between the axon endings of one neuron and the dendrites of cell body of another neuron is called:

   a. synapse
   b. systolic
   c. syncope
   d. vertigo

8. The brain and spinal cord are covered with tough membranes: the dura mater, arachnoid, and pia mater. Together these layers make up the:

   a. myelin sheaths
   b. meninges
   c. mastoids
   d. ganglions

9. The layer of the meninges which is filled with cerebrospinal fluid is:

   a. dura mater
   b. pia mater
   c. alma mater
   d. arachnoid

10. The vital centers—the cardiac, vasomotor, and respiratory—are contained in the:

    a. hypothalamus
    b. cerebrum
    c. cerebellum
    d. medulla

11. How many pairs of cranial nerves are there?

    a. 10
    b. 12
    c. 31
    d. 44

12. The autonomic nervous system has two divisions: the sympathetic nervous system and the parasympathetic nervous system. Many of the actions of these two systems are opposite to each other. However, though the parasympathetic has no effect on the muscles in the skeletal blood vessels, the sympathetic will:

    a. also have no effect
    b. dilate them
    c. constrict them
    d. increase them

POST TEST - continued

13. Auditory impulses are controlled in the:

    a. parietal lobe
    b. frontal lobe
    c. temporal lobe
    d. occipital lobe

14. Motor activities are controlled in the:

    a. parietal lobe
    b. frontal lobe
    c. temporal lobe
    d. occipital lobe

15. Efferent neurons are the same as:

    a. peripheral neurons
    b. sensory neurons
    c. afferent neurons
    d. motor neurons

16. Which activity is centered in the spinal cord?

    a. breathing
    b. reflexes
    c. digestion
    d. heartbeat

17. How many pairs of spinal nerves are there?

    a. 12
    b. 24
    c. 31
    d. 36

18. Which occurs with normal functioning of the parasympathetic system?

    a. digestion slows down
    b. blood vessels in the skeletal muscles dilate
    c. normal heartbeat
    d. increased blood pressure

19. The elongated projection which transmits impulses away from the cell body is the:

    a. dendrite
    b. axon
    c. synapse
    d. neuron

POST TEST - concluded

20. The projection which transmits impulses to the cell body is the:

    a. dendrite
    b. axon
    c. synapse
    d. neuron

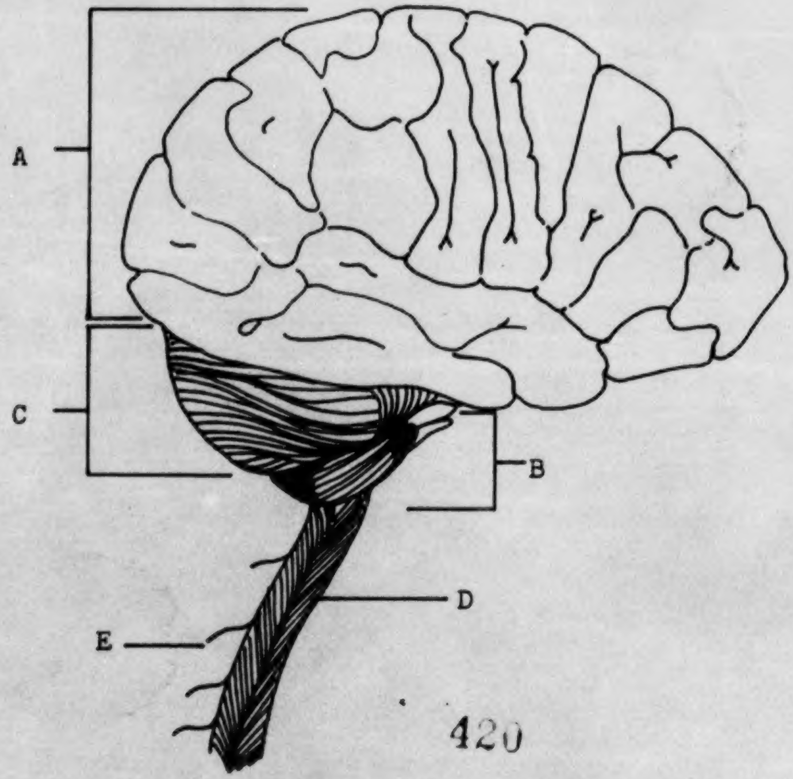
21. Loss of movement on one half of the body, such as the left side, is called:

    a. hemiplegia
    b. paraplegia
    c. quadriplegia
    d. paralysis

22. A disease in which the patient has convulsions is called:

    a. emphysema
    b. asthma
    c. epilepsy
    d. hemiplegia

Directions: Identify and write the names of the five parts of the central nervous system. Use the lines provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.



ANSWERS TO POST TEST

Module 31

1. b
2. c
3. b
4. c
5. d
6. b
7. a
8. b
9. d
10. d
11. b
12. b
13. c
14. a
15. d
16. b
17. c
18. c
19. b
20. a
21. a
22. c

CENTRAL NERVOUS SYSTEM

A. cerebrum

B. medulla

C. cerebellum

D. spinal cord

E. peripheral nerves (spinal)

POST TEST

Module J2 and J3

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. The amount of light entering the eye is controlled by the:

   a. cornea
   b. iris
   c. pupil
   d. retina

2. The part of the eye which changes its shape to adjust to near or distant vision is the:

   a. retina
   b. cornea
   c. lens
   d. pupil

3. Tympanic membrane refers to the:

   a. sclera of the eye
   b. pinna of the ear
   c. eardrum
   d. ossicles of the ear

4. Air pressure is kept equal in the outer and the middle ear by means of the:

   a. eardrum
   b. ossicles
   c. eustachian tube
   d. cochlea

5. The portion of the ear structure concerned with balance is the:

   a. cochlea
   b. hammer, anvil, and stirrup
   c. auditory canal
   d. semicircular canal

6. What kind of light causes the pupil to dilate?

   a. bright
   b. normal
   c. dim
   d. sunlight

POST TEST - continued

7. The snail-shaped part of the inner ear is the:

   a. cochlea
   b. semicircular canal
   c. eardrum
   d. hammer, anvil, and stirrup

8. The "white" of the eye is the:

   a. sclera
   b. iris
   c. retina
   d. choroid

9. The malleus, incus, and stapes are found in the:

   a. labyrinth
   b. semicircular canals
   c. middle ear
   d. inner ear

10. The colored part of the eye is the:

    a. iris
    b. retina
    c. sclera
    d. choroid

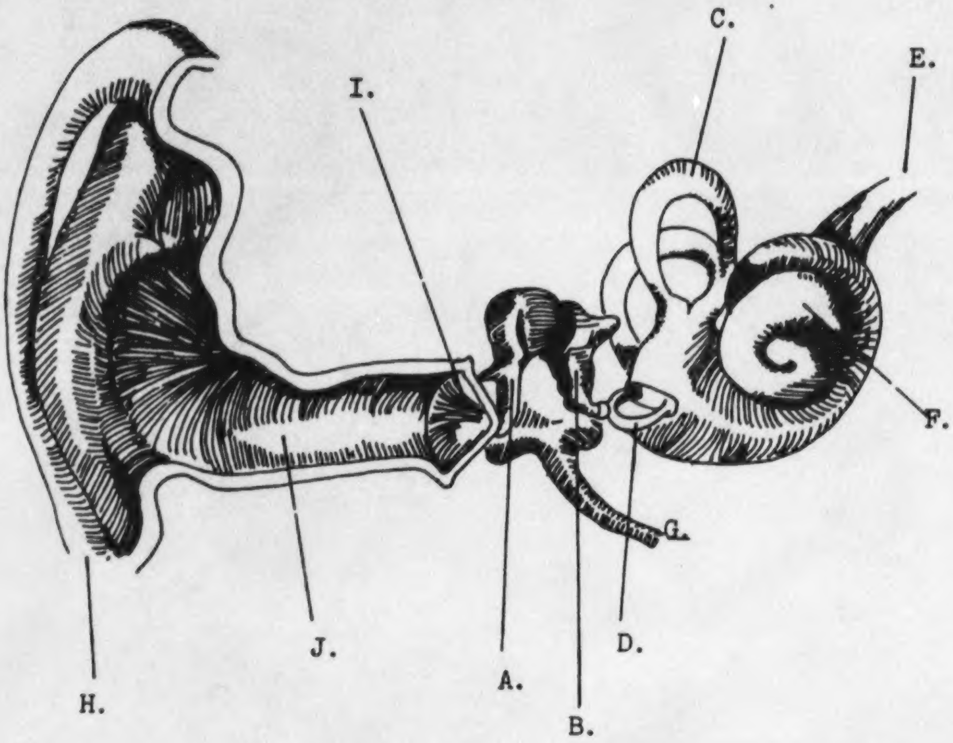
11. The pinna refers to the:

    a. outer ear
    b. middle ear
    c. inner ear
    d. white portion of the eye

POST TEST - continued

Directions: Identify and write the names of the ten parts of the ear. Use the lines provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.

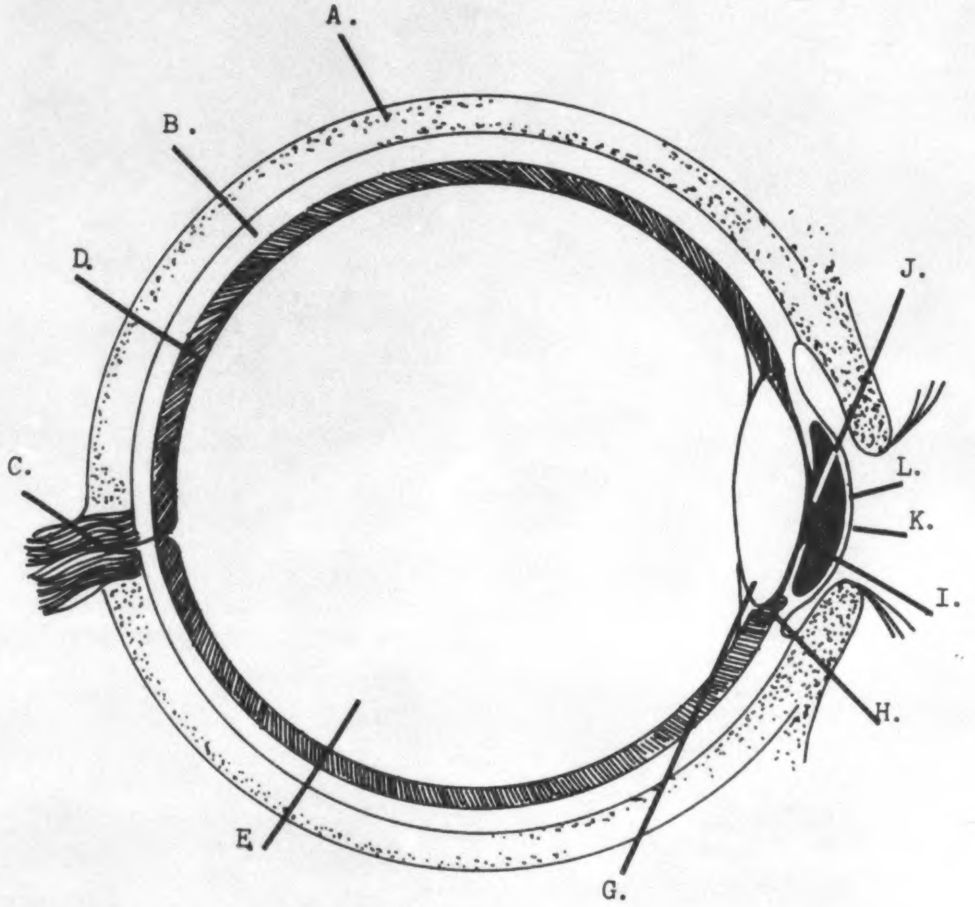
THE EAR



POST TEST - concluded

Directions: Identify and write the names of the twelve parts of the eye. Use the blank lines provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.

THE EYE



ANSWERS TO POST TEST

Module J2 and J3

1. b
2. c
3. c
4. c
5. d
6. c
7. a
8. a
9. c
10. a
11. a

THE EAR

A. malleus (hammer)
B. incus (anvil)
C. semicircular canals
D. stapes (stirrup)
E. auditory nerve
F. cochlea
G. eustachian tube
H. pinna
I. tympanic membrane
J. auditory canal

THE EYE

A. sclera
B. choroid
C. optic nerve
D. retina
E. vitreous fluids
F. iris
G. lens
H. ciliary muscle
I. aqueous fluid
J. pupil
K. conjunctiva
L. cornea

SAMPLE ANSWER SHEET

NAME ____________________ DATE ____________________

UNIT __________ MODULE __________

(1) a b c d e f g (2) a b c d e f g (3) a b c d e f g

(4) a b c d e f g (5) a b c d e f g (6) a b c d e f g

(7) a b c d e f g (8) a b c d e f g (9) a b c d e f g

(10) a b c d e f g (11) a b c d e f g (12) a b c d e f g

(13) a b c d e f g (14) a b c d e f g (15) a b c d e f g

(16) a b c d e f g (17) a b c d e f g (18) a b c d e f g

(19) a b c d e f g (20) a b c d e f g (21) a b c d e f g

(22) a b c d e f g (23) a b c d e f g (24) a b c d e f g

(25) a b c d e f g (26) a b c d e f g (27) a b c d e f g

(28) a b c d e f g (29) a b c d e f g (30) a b c d e f g

(31) a b c d e f g (32) a b c d e f g (33) a b c d e f g

(34) a b c d e f g (35) a b c d e f g (36) a b c d e f g

(37) a b c d e f g (38) a b c d e f g (39) a b c d e f g

(40) a b c d e f g (41) a b c d e f g (42) a b c d e f g

(43) a b c d e f g (44) a b c d e f g (45) a b c d e f g

(46) a b c d e f g (47) a b c d e f g (48) a b c d e f g

(49) a b c d e f g (50) a b c d e f g (51) a b c d e f g